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OPTIMISES

In the leasing industry, much can change in a year

Despite increasing competition, lease yields have remained relatively stable, writes **Jack Dutton**.

In many industries, little change occurs in a single year, but that is not the case for aircraft leasing. The industry continues to grow at a rapid pace, and our Top 50 lessors for 2017 now have 9,151 aircraft between them – 477 more than the 2016's figure.

Several events have transformed the leasing industry since we released our last Leasing Top 50 in September 2016. The obvious one is DAE Capital's acquisition of AWAS. That deal, which closed on 20 August, was one of the biggest changes in the leasing industry over the past year; one in which the Dubai-based lessor took on another $7.5 billion of aircraft assets.

As a result, DAE is now the seventh-biggest lessor in the world, having climbed 21 places from our Leasing Top 50 last year. After the acquisition, the consolidated lessor has a fleet of 400 owned, managed and committed aircraft, on lease to 113 lessees. It has an average fleet age of 5.8 years and an orderbook of 23 aircraft.

Despite being in portfolio sale mode over the past three years, selling about $4 billion of assets a year, GECAS retains its position as the top lessor by fleet size, with 1,271 aircraft. The US company said recently that it aims to return to net buyer status in 2018, as it seeks to originate $5 billion to $6 billion of aircraft transactions and lower its rate of sales to "a couple of billion dollars'-worth" of assets a year.

AerCap, meanwhile, secures top spot for value of assets, with a portfolio worth about $35.1 billion. The company is also the largest lessor of 787s, owning 50 of them, according to *Airfinance Journal*'s Fleet Tracker.

Shareholders in Avolon have often stated their ambitions to become a top three aircraft lessor. The $10.4 billion acquisition of CIT Aerospace, which closed in April, helped them achieve that. The combined business now has an owned fleet of 572 aircraft worth about $21.2 billion, according to our leasing data, which ranks the lessor at third place, up from 11th in 2016.

The stories of Avolon and DAE are ones of consolidation and, although a high volume of consolidation has occurred in the industry over the past year, several lessor chief executive officers have told me they expect more of the same over the next few years.

Where will this consolidation come from? The likely answer is Asia, where there are fewer established leasing platforms and plenty of companies looking to park their money. In China, further consolidation may be triggered by regulators telling Chinese businesses to deleverage and clean up their balance sheets. Many of the country's lessors are linked to the banks, which are usually state-owned. Some of these newer lessors may lack the necessary experience and resources needed for the sector and are likely to make mistakes as they go along, prompting the regulators to step in and force lessors to consolidate as a result.

Lease rates remain under pressure and will likely continue to do so until there is more consolidation in the industry. Some of the more liquid narrowbody lease rate factors are dropping into the high 0.5% a month as new players from Asia mark their businesses to a return on lower equity requirements.

That being said, there appears to be no real decline in lease yield among the top 10 lessors. Of the seven we analysed, lease yields stayed relatively stable – which initially seems surprising given lower lease factors and increased competition from new lessors. However, what is probably happening here is that the top 10 are protected from these pressures by the scale of their existing leasing mandates and relationships. Many do not need to race to provide the lowest pricing, given the diversity of their portfolios and years of experience. They are also a safe bet for lessees. Although it is rare, sometimes there are cases where more established lessors are called in to support sale-and-leaseback deliveries when some of the newer lessors have failed to deliver on their promises.

Additionally, there still seems to be plenty of financing options for lessors. Although secured debt has remained relatively constant, unsecured debt has proved to be an increasingly popular financing solution, with the volume for 2016-17 nearly double 2012-13's figure of $20 billion, according to data from seven of the top 10 largest lessors. Average interest costs for those lessors remain low, ranging from 4%-4.5% on average, with some achieving rates as low as 2.5%-3%.

Deals such as the AWAS and CIT acquisitions show how much can change in this industry over the course of 12 months. No doubt there will be more interesting stories to tell this time next year.

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Former Air Arabia executive to lead **Salam Air**

Salam Air's board of directors has appointed Mohamed Ahmed as its new chief executive officer, effective 2 October.

Ahmed will be leading the Omani-based budget carrier through its next phase of development focusing on "driving efficiency, performance and customer satisfaction".

An industry veteran with more than 30 years' experience, Ahmed joins Salam Air from Air Arabia where he was the group's director of operations and maintenance, and "many other roles within the organisation including being an active board member in many of the joint ventures and subsidiaries".

During his tenure at Air Arabia, he played a key role in the start-up of the airline and most of its subsidiaries, including setting-up five new AOCs (airline operator's certificate) "across the Arab world and Far East".

Ahmed replaces Francois Bouteiller, who had been appointed chief executive officer in October 2016.

Salam Air launched operations on 30 January. It flies Airbus A320s from Muscat, Suhar and Salalah to Dubai, Jeddah, Karachi and Sialkot, Pakistan.

Mohamed Ahmed, chief executive officer, Salam Air

Airbus Bank names new MD

Airbus Bank's supervisory board has appointed Jürgen Wienes as its new managing director.

Wienes takes over the management of back-office operations from Franz Plesser, who left the position of managing board of Airbus Bank at the end of September.

He was UniCredit's head of structured trade and export finance (STEF) until May 2017.

Franz Plesser has been managing director of the bank since Airbus acquired it in December 2014 and was involved in its transformation over three years.

Jürgen Wienes, managing director Airbus Bank

Millar out, Corman in at **Stellwagen**

Former Ryanair chief financial officer Howard Millar has left Stellwagen Capital, a subsidiary of Aviation Finance Company (AFC). Millar was appointed chief operating officer of Stellwagen Group, the holding company of AFC and Seraph Aviation Management, and chief executive of Stellwagen Capital, in May 2016.

Stellwagen has appointed Scott Corman as chief executive officer of Stellwagen Capital.

David Butler has also joined as chief operating officer of the group, effective 1 October. Before joining the group as part of the ECN Capital transaction, Corman served as an executive managing director, leading the firm's expansion into structured finance services in both the rail and aircraft markets. He previously spent 13 years as head of the transportation asset finance team at Credit Suisse in New York.

Butler previously spent more than a decade at Digicel, a provider of mobile services, enterprise solutions and cloud computing.

Osako becomes SVP at Japan Air Commuter

Japan Air Commuter (JAC) has appointed Masahiko Osako as its new senior vice-president, replacing Jun Otake, *Airfinance Journal* understands.

Osako formerly worked for JAC's parent, Japan Airlines (JAL), as vice-president general affairs, China region, based in Beijing.

Otake, who resigned on 29 June, has moved to Tokyo to become vice president of route management.

He has been with JAL for almost 30 years and was assigned to JAC between June 2014 and June 2017.

JAC is in the process of retiring some of its Bombardier aircraft and replacing them with ATRs. *Airfinance Journal* reported on 2 May that JAC was in the process of retiring MSN 4073, a Q400.

In April, JAC began ATR operations with the addition of an ATR42-600.

AJW appoints asset management SVP

Spare parts company AJW has promoted Conrad Vandersluis to senior vice-president strategic material and asset management.

Vandersluis will focus on helping AJW's airline customers secure higher returns on their capital expenditure. His role will include coordinating and developing specific purchasing activity for aircraft spares to support customers, including airlines, aircraft manufacturers and original equipment manufacturers, by optimising inventories and streamlining operating costs.

He was most recently AJW's vice-president strategic material and asset management, a position he held for just over a year.

Vandersluis, who will manage a team of five, has more than 30 years' experience in the aviation industry, including roles in sales at Flightspares and Skybrakes/APPH, before joining AJW in 2003.

Conrad Vandersluis, senior vice-president strategic material and asset management, AJW

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Debevoise & Plimpton hires Liu as partner

Debevoise & Plimpton has hired Brian Liu to join the US law firm's New York office as a partner and member of its aviation practice.

Liu, who was previously at Hughes Hubbard, will focus on all aspects of aviation and equipment finance.

His previous work included the representation of airlines, leasing companies and financial institutions.

"Brian's in-depth knowledge of this sophisticated market will bring additional perspective and insight as we continue to help guide clients through what can be a very turbulent environment," says Michael Blair, the firm's presiding partner.

Liu has advised on enhanced equipment trust certificates and secured notes issuances, securitisations, syndicated credit facilities, second lien facilities, warehouse facilities, sale and leasebacks and restructurings.

Brian Liu, partner and member, Debevoise & Plimpton

Sarasin steps down at **Nok Air**

Patee Sarasin, who has been chief executive of Nok Air since the Thai low-cost carrier launched in 2004, stepped down from the job on 14 September.

He was replaced by NokScoot chief executive officer Piya Yodmani.

Sarasin, who becomes vice-chairman, remains on the company's board of directors.

Somchainuk Engtrakul resigned as chairman of the board and independent director at Nok Air in August.

Patee Sarasin, vice-chairman, Nok Air

Fabian leaves top job at **Elix Aviation Capital**

Volker Fabian has left his post as the chief executive officer of Dublin-based Elix Aviation Capital.

Fabian joined Elix on 1 March and replaced Antonis Simigdalas.

He joined from BOC Aviation, where he had been executive vice-president of airline leasing and sales for the Europe and Africa region since May 2015.

Previously, he served as chief commercial officer of Intrepid Aviation for three years.

Fiscel joins **Bank of China**

Arnaud Fiscel has been appointed as head of transportation at Bank of China London.

Fiscel is responsible for aviation, shipping and rail. He joined the bank from UK Export Finance, where he was acting as senior adviser. Previously he was managing director - head of aviation, London desk at French bank Societe Generale. Previously he held senior aviation roles at Barclays. He also spent seven years at BNP Paribas, including as head of Asia Pacific for aviation, based in Singapore.

Arnaud Fiscel, head of transportation, Bank of China London

Aircastle hires chief accounting officer

Aircraft lessor Aircastle has hired Jay Maronilla as chief accounting officer.

Maronilla joins from brokerage Convergex, where he was senior vice-president finance and assistant global controller.

He has also held senior treasury positions at GE Capital.

Aaron Dahlke, Aircastle's chief financial officer, had been interim chief accounting officer since June after the appointment of Michael Inglese to chief executive officer.

Faak leaves **NordLB**

Oliver Faak, global head of shipping and aircraft finance at NordLB, has left the bank. His role will be divided between global heads for each of the two sectors.

Faak has been global head of ship and aircraft finance since July 2014, after holding two separate shipping roles at the bank between January 2011 and June 2014. Before that, he was head of transport and export finance at DekaBank. Harald Brauns, NordLB's head of aircraft, is retiring after 40 years with the German financier. Frank Wulf, the previous managing director and regional head of aviation for Europe, Middle East and Africa at DVB Bank, will succeed him. Wulf will start his role as aviation head at NordLB in October.

CALC appoints VP procurement

China Aircraft Leasing (CALC) has appointed Sean Farnan as vice-president procurement. He will lead the Hong Kong-based lessor's aircraft and engine acquisitions.

Farnan previously worked at British Airways for 20 years, "evaluating, selecting, acquiring and developing commercial aircraft, and played a key role in new aircraft orders that amounted to $37 billion, at list prices, in total over the years he worked for the airline".

CALC improved its cash position during the first half of 2017, reporting cash and cash equivalents of HK$6.6 billion ($848 million) as of 30 June 2017.

This compares to cash and cash equivalents of HK$5.8 billion at 31 December 2016. During the first half of 2017, the lessor took delivery of nine aircraft, seven of them new, increasing its fleet to 90 aircraft by 30 June 2017. The company expects to deliver 20 more aircraft to customers in the second half of 2017, thereby expanding its fleet to at least 110 aircraft by the end of 2017.

Thailand braces for rocky months of recertification

Many of the country's airlines look unlikely to fly internationally until at least December. **Michael Allen** speaks to some of the carriers and lessors involved.

At least a dozen Thai airlines have temporarily lost their permission to fly international routes before an upcoming ICAO safety assessment of the country.

The ban, first imposed by the Civil Aviation Authority of Thailand (CAAT) and subsequently also by Thailand's prime minister, is effective 1 September 2017 to 31 January 2018.

Thailand was given a "red flag" by the ICAO in June 2015 over safety concerns, and CAAT hopes ICAO will remove this after the audit scheduled for between 20 September and 27 September.

Sources say the airlines affected by the international flight ban are likely to lose millions of dollars in revenues while they wait – until at least December – because once an audit is complete it can still take up to 60 days for its report to come out.

"This is putting the airlines in a very difficult situation and it is not the fault of their own. Everybody is a little bit worried about Thailand right now because of this issue. A lot of airlines are going to have huge financial impacts. People are going to lose millions and it's hard for anybody's balance sheet," says a source at an airline that did not get recertified.

Because of limited resources, CAAT has prioritised airlines for audit based on traffic or passenger numbers in order that the least number of passengers be affected, *Airfinance Journal* understands. Those airlines with relatively few passengers and traffic are having to wait.

"Obviously they went for the big boys first," says a source with experience working with Thai airlines. "Some of the little guys are probably saying, 'We've been waiting for our audit but nobody's knocked on our door!'"

Leasing partners

Thailand has a notoriously bad reputation in the industry for airlines defaulting on lease rentals, and this latest development will be of concern to lessors with exposure to the airlines involved. The inability to fly international routes will almost certainly hit the airlines' revenues and could therefore impact their abilities to pay monthly lease instalments.

Airfinance Journal understands that "basically every airline except the top nine [by traffic and/or passenger numbers]" – Bangkok Airways, NewGen Airways, NokAir, NokScoot, Thai Airasia, Thai Airasia X, Thai Airways, Thai Lion Air and Thai Smile – has failed to have its AOC recertified".

These are AC Aviation, Advance Aviation, Asia Atlantic, HS Aviation, Jet Asia Airways, K-Mile, MJets, Siam Land Flying, Skyview Airways, Orient Thai Airlines, Thai Vietjet Air and VIP Jets.

Airfinance Journal's Fleet Tracker indicates that Asia Atlantic Airlines, a joint venture between Japanese travel agent HIS and Thai hotelier Baiyoke, has two Boeing 767-300ERs. One (MSN 25287) is on lease from Jet Midwest and the other (MSN 24846) from Automatic Leasing.

Jet Asia Airways has a fleet of five aircraft, four 767-200ERs and one 767-300ER.

Kan Air leases two ATR72-200s (MSNs 777 and 782) from Nordic Aviation Capital. It also plans to lease two more from the airline, though Fleet Tracker indicates these deliveries may have been cancelled. NAC declined to comment.

Cargo operator K-Mile has three 737-400Fs and three 727-200Fs. One of the 737-400Fs (MSN 29209) is on lease from GECAS. The other two 737s (MSNs 29000 and 28492) are leased from the airlines' parent, ASL Airlines Switzerland. One of the 727s (MSN 22080) is leased from European Air Transport, part of DHL. The other two 727s (MSNs 21700 and 21392) are on lease from Malaysian cargo carrier Raya Airways.

According to K-Mile's website, all six of its scheduled routes are international, meaning the ban on international flying would lead to all its routes being suspended.

"K-Mile is one of 12 airlines to not receive AOCR [AOC renewal] by the 31 August deadline due to lack of sufficient CAAT resources," K-Mile deputy general manager Stefan Oechsner tells *Airfinance Journal*.

"According to CAAT, the pressure to keep this deadline is due to the ICAO schedule to audit CAAT and remove the red flag in September. CAAT has noted no safety or operating issues for K-Mile and we expect to fly internationally again next week or the week after, depending on how many resources CAAT can spare," he adds.

> *We really do believe the actions of the CAAT had to take place in order to restore Thailand, and the fate of the individual operators had to take second priority to that.*
>
> **Ronald Brickerd**, director, Thayaan Aviation Consultants

A GECAS spokesman says: "We continue to monitor the situation in Thailand. GECAS values its relationship with ASL Airlines and K-Mile and understands that Thai officials are working to resolve any AOC issues."

Orient Thai Airlines, which operates a mix of 737s, 747s and 767s, has already been involved in disputes with leasing partners before this situation, according to several lawyers involved in the cases.

The airline's lessors and creditors include Air Lease (ALC), Bank of New York Mellon, Grandmax and ILFC (which is now part of AerCap), according to Fleet Tracker.

The airline answered a call from *Airfinance Journal*, but asked for questions to be sent by email. It did not reply by press time.

R Airlines has three active aircraft in its fleet, comprising one 737-400 (MSN 25313) from Bank of Utah, one A320 (MSN 466) from ACG Acquisitions and one A321 (MSN 1017) from Plane Business Leasing.

Thai Vietjet has three A320s on lease from GECAS.

One source notes that some of the airlines that have not renewed their AOCs are already "deeply in debt", and were not flying even before the non-renewal.

"If they are already in default with their lessors this is going to make them more in default," says the source.

"The leasing companies will have to make a decision if they have a good relationship with them. If the airline has a great relationship with the lessor they can manage."

Another source says that airlines and lessors knew well in advance that this situation was coming. Ronald Brickerd, director at Thayaan Aviation Consultants, says: "Over the last two years, the CAAT have handled them in a very respectful way without closing them down or withdrawing their AOCs. I think now some of the airlines will just run out of cash."

"I don't think lessors are concerned right now. The relationship has been going on and everybody knows it's coming. I would not be surprised if they had reached some kind of compromise with their lessors," he says.

Source: Asia Atlantic Airlines

A successful case

NewGen Airways was set up in 2012 and flies routes between China and Thailand. Shortly after getting its AOC reissued on 24 August, the airline added a pair of 737-800s.

An airline source says NewGen Airways is "operating normally" and that it has "a very good relationship with the Thai government".

The source adds that NewGen Airways intends increasing its fleet in 2018. The airline now has 12 aircraft, comprising eight 737-800s and four 737-400s. The -400s will be gradually returned to their lessors as the airline transitions to an all -800 fleet.

"We will also try to open some new routes other than China. We will not only focus on China but also India, Indonesia and Vietnam," says the source.

'Glorious' future

Despite the Thai aviation industry bracing for a rocky few months, several sources expressed confidence that once the audits are done and Thailand manages to shed its red flag, the country could emerge as a more respected member of the international aviation community.

"Although it's a tough pill to swallow, on the other side of the renewal of the AOC it's glorious: you are back with a new AOC, international standards," says one source.

"The airlines who take it seriously will be fine, but those who don't have the competence level or understanding are going to get a serious wake up call. And they will take everyone down with them – their staff, their leasing companies and their stakeholders."

Brickerd adds: "We really do believe the actions of the CAAT had to take place in order to restore Thailand, and the fate of the individual operators had to take second priority to that."

Bombardier to rebuild its Q400 backlog

The Canadian manufacturer introduces a standard 82-seat cabin after significant sales at the Paris air show.

Bombardier is looking to win new campaigns as the manufacturer celebrates its first year of service.

Similar to other aircraft programmes, the planned ramp-up of the CSeries production will not be without its difficulties.

At mid-September, Bombardier had delivered 11 CSeries to customers this year and is targeting 30 units by year end.

The 19 aircraft shortfall translates into 5.4 aircraft a month, should Bombardier succeed in its task.

Commercial aircraft president Fred Cromer says the ramp-up is manageable but recalls that every product has its "challenge".

"We are orchestrating the ramp-up with all different suppliers," he says.

He adds that the supply issue was created by the engine manufacturer but he sees the right amount of resources and efforts from the suppliers to solve the problem.

He says there is significant interest in the product and Bombardier is encouraged by the level of discussions. The CSeries has applications with every type of airline, he says.

Meanwhile the Bombardier Commercial Aircraft team keeps investing in other products.

Q400 diversification

The Canadian-based manufacturer concedes that the focus has been on the CSeries over the past few years but recalls that over the past five years, 19 new operators have been introduced to its turboprop programme.

"We are investing in the Q400 to increase capacity and make significant changes," says Todd Young, vice-president and general manager customer services for the Q400 programme.

The Q400 turboprop will switch to a new cabin standard 82-seat 30-inch pitch configuration that will be available in the second half of 2018.

The aircraft's entryway has been opened up with the removal of the starboard side forward baggage hold, giving three extra windows. This gives the Q400 a brighter and more spacious interior with the addition of three windows, and reduces its weight and maintenance costs, he says.

Bombardier's new aircraft configuration will also include the removal of two galleys at the back of the aircraft in favour of one large galley.

Other changes the manufacturer has introduced include A-checks at 800 hours and C-checks at 8,000 hours on the Q400, giving a 20% direct maintenance cost advantage.

Bombardier already offers a 50-seat cargo combi turboprop at 32-inch seat pitch, a dual class 74-seat aircraft with 30- and 35-inch seat pitch and a high-capacity 90-seat 28-inch pitch version.

"The new standard aircraft set the stage for what the Q400 can offer to the market," says vice-president of marketing Patrick Baudis.

He observes that airlines are no longer using turboprops in a basic way but in a more integrated way.

"We see a shift in the marketplace. Airlines wants more than a basic aircraft and there is a great potential for us," says Baudis.

Colin Bole, vice-president, sales and asset management, echoes his view.

"The Q400 orders announced at this year's Paris air show demonstrate that we are getting back. Our market share has been low but we are working on building a backlog," he says.

In Paris, Bombardier announced two firm orders with Philippine Airlines (seven Q400s) and Ethiopian Airlines (five Q400s). But the Canadian manufacturer also unveiled Indian carrier Spicejet for a 50-aircraft letter of intent, which is expected to be firmed up soon. Bombardier also signed a memorandum of understanding with South Africa's Cemair for two Q400s.

"We now see a momentum in lots of campaigns. The Q400 campaign list is larger than our two other products," he adds. "We have a strong presence in North America despite the negative perception of the turboprop in the USA. Canada is a large market for us and airlines are keen to add aircraft."

The Latam and Caribbean market has been more challenging but Bole says a number of campaigns are underway. He remains confident that size, speed and the performance of the Q400 will serve local carriers.

"In a way, the Latam market mimics the African market where we have sold very well over the years. In any route, any airport, the Q400 can be a great developer for airlines."

For Bole, Asia is the new frontier for the Q400. He recalls the interest in the high-capacity aircraft with recent orders and commitments from Nok Air in Thailand, Philippine Airlines Express and Spicejet, which will operate its fleet with 90 passengers.

Interchangeability is another advantage. Canada's Westjet, Nok Air and Spicejet operate their Q400 fleets along Boeing 737s as a fully complementary aircraft.

CRJ new cabin

Bombardier has also launched a new cabin interior version, called *Atmosphere*, for its CRJ products, its first investment in 10 years in the regional jet market.

"Our market share has been low but we are working on building a backlog."

Colin Bole, vice-president, sales and asset management, Bombardier

CRJ programme manager Jean-Francois Guay says the passenger-centric design of the new cabin concept aims to provide a seamless experience for the passenger.

Atmosphere, which will be available in the second half of 2018, includes a new larger entrance because the manufacturer reworked on the galley space at the front of the aircraft.

Bombardier also concentrated its efforts on space. The manufacturer has increased the size of its overhead bins by 40% in the standard cabin, while business passengers will benefit from a 50% capacity increase.

The lavatories will be 60% larger, says Bombardier, and will accommodate passengers with reduced mobility.

"We provide options for a window in the lavatories," says Guay.

Bombardier also introduced a mood lighting and harmonised coloration while passengers will have wi-fi and in-seat power introduced all across the cabin.

Other changes the manufacturer has introduced includes A-checks at 800 hours and C-checks at 8,000 hours on the CRJs, giving 14 fewer maintenance days for operators and more than $300,000-a-year savings per aircraft.

Orders and market forecasts

The CRJ programme has recorded more than 1,910 firm orders and 1,865 deliveries since its first handover to Lufthansa Cityline in 1992.

By 2005, Bombardier had delivered its 1,000th CRJ. There are now more than 120 operators in 90 countries.

Bombardier says North America is the largest replacement market in the world.

In the large regional aircraft market, which Bombardier defines between 60 and 100 seats, 33% of the total fleet is more than 10 years of age, according to its 2017-2036 market forecast.

Bombardier anticipates that 2,100 aircraft or 64% in that market is expected to retire over the next 20 years. The study shows there are 3,300 aircraft in service in the 60- to 100-seat market, but a total of 5,750 deliveries are anticipated over the next 20 years. Of those, 1,400 new deliveries will head to the North American market.

By 2036, the fleet will include 6,950 aircraft, according to the forecast, as small regional aircraft operators will upgauge to larger regional aircraft models.

About 60% of the regional jet fleet is in the USA, according to Baudis.

"The elephant in the room are the scope clauses and we believe they are not likely to change anytime soon," he says.

Baudis' reading of the market is that scope clauses are now aligned in terms of capacity, quantity and weight limits. He also observes that the pay difference between flying a regional aircraft versus a mainline aircraft has narrowed.

But he also points out the pilot shortage in the USA and that airlines do not negotiate for new regional jets they cannot crew.

Embraer considers building new turboprop

Embraer is mulling the possibility of building a next-generation turboprop aircraft to address untapped market demand over the next 20 to 30 years.

The Brazilian manufacturer discussed the new product during its first airline advisory board at its European headquarters in Amsterdam.

The event involved a group of "leading flag carriers", John Slattery, chief executive officer of Embraer Commercial Aviation, tells *Airfinance Journal*. "As we think about the technology that's been adopted on the current turboprops, it's aged. It's very sad. Nobody objectively or subjectively can challenge that. The technology is multiple decades old," he says.

"In addition to that, what airlines are looking for is robust after-sales support. Should one bring to the market a state-of-the-art platform? I believe that not only will there be a continuation of the demand of turboprops – I don't believe there's any challenge in that – but I believe that the addressable market will increase from what we've seen over the last five or 10 years," he says.

He adds: "Because airlines are chasing the lowest and most efficient cost option, with the advent of new aircraft materials and new design technology, particularly around wings and the advent of new powerplant technology, I believe there is potential for a better offering for the airlines than what's being offered today."

Slattery says that this is the main reason why the Brazilian manufacturer is considering building a new-technology turboprop. He says that the turboprop "is a process I'm taking very seriously" but adds that "no final decision has been made yet".

Turboprop 'monopoly'

Slattery praises Christian Scherer at ATR for gaining a competitive advantage over Bombardier.

"We asked those airlines how they felt about the incumbent offering, whilst it is somewhat of a duopoly today; the reality is, it's really a monopoly."

This quasi-monopoly is due, in large part, he says, to excellent management at ATR. "Christian running ATR is running an excellent organisation and they have been super successful, not just in the last 12 months, but in the last number of years in creating clear blue sky between themselves and their competitors in Canada. I think they're winning three or four to one."


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Asset managers respond to **geared turbofan problems**

Engine and aircraft lessors speak to **Alex Derber** about how the PW1100G delays will impact the market and their future delivery schedules.

Source: Airbus

Rarely does the debut of new aviation technology run smoothly, but the entry into service of Pratt & Whitney's PW1100G geared turbofan (GTF) on the Airbus A320neo has been particularly fraught.

Significant problems first came to light in early 2016, when longer-than-expected start times led to Qatar Airways cancelling the first four of 50 A320neos on order. The issue was traced to a thermal deformation issue known as rotor bow, which Pratt incrementally addressed with hardware and software fixes to drag PW1100G start times towards those of the IAE V2500 and CFM56 – the A320 powerplants that the geared turbofan was designed to supersede.

> *"Lessors take a long-term view of asset value, so unless the problems are so bad that it provokes a fundamental engine redesign, you should be able to ride it out."*
>
> **Ben Hughes**, marketing and business development director for Rolls-Royce & Partners Finance

Then, however, Pratt suffered production difficulties relating to the alloy-based fan blades used in all but the smallest PW1000G variants, forcing it to lower its delivery goal for 2016 from 200 to 150 GTF engines. This led to the embarrassing sight of fully assembled, but engine-less A320neo airframes marooned on the Toulouse tarmac.

Airbus said in October 2016 it had 20 A320neos outside its factory awaiting powerplants, and the delays fed through into this year. In the first half of 2017, Airbus delivered 59 PW1100G- and CFM LEAP-equipped A320neos – well behind its timetable of 200 deliveries for the year. In its first-half results, Airbus attributed the delay to problems with the PW1100G – problems that extended beyond the production line and into the active fleet.

"The ramp-up remains challenging and our customers are still experiencing a number of in-service engine issues. Pratt & Whitney has introduced some fixes, but we are still waiting to see when improvements come through on a reliable basis under normal airline operational conditions," Airbus chief executive officer Tom Enders told analysts in a July 2017 earnings call. He added that PW1100G operators were suffering a "way too high rate of removal" of engines.

Removal rates appear to have spiked in hot and harsh conditions, with Indian low-cost carriers Go Air and Indigo reported to be particularly affected. India's parliament heard in July that the issues centred on combustion chamber distress and undue wearing on a carbon seal plate.

Speaking to shareholders in September, Indigo president, Aditya Ghosh, said that design changes by Pratt to address the issues would take up to 18 months to implement, and that, for now, the airline was focused on getting enough spare engines to cover its removals. Indigo has 22 A320neos in service and 408 (including A321neos) on order, according to *Airfinance Journal*'s Fleet Tracker.

Engine lessor response

Spare engine provision is the purview of engine lessors, manufacturers and maintenance, repair and overhaul providers.

Jon Sharp, president of Engine Lease Finance (ELFC), says that his company has a couple of PW1100Gs on long-term lease, but adds that "the current EIS [entry into service] problems and difficulties with production rates mean that there are no acquisition opportunities at present".

High removal rates should boost demand and hence lease rates for an engine, though Sharp knows of "no PW1100Gs in the spot market", so lessors are unlikely to benefit directly from the sudden need for spares. The core of their portfolios, however, are current-generation CFM56 and V2500 engines, demand for which remains strong and may be extended as certain operators convert some of their A320neo orders into Ceos.

Even if lessors did have plenty of GTF, "lessors take a long-term view of asset value, so unless the problems are so bad that it provokes a fundamental engine redesign, you should be able to ride it out", says Ben Hughes, marketing and business development director for Rolls-Royce & Partners Finance.

"Under long-term operating leases, airlines take the operational risk – and for new engine types most airlines put this risk back to the OEM [original equipment manufacturer] under warranties and

Source: Airbus

"There's well-published news on delays around the GTF programme for the A320neo and that has had some impact, probably more looking forward than looking back for our customers and obviously it is disappointing."

Peter Barrett, chief executive, SMBC Aviation Capital

maintenance contracts – so lessors shouldn't be out of pocket in the short term," he adds.

Likewise, Sharp is confident that the PW1100G – which operators say is meeting its fuel burn target of 16% better efficiency than current-generation equipment – will move past its current problems.

"We are sure that P&W will overcome the present issues and look forward to building a substantial fleet," he says.

Aircraft lessor response

Aircraft lessors own engines as part of their aircraft portfolios, and not usually as separate equipment to be leased in its own right. As such, they are more exposed to the PW1100G's current missteps than engine lessors.

Air Lease (ALC) has said it may put off disposals of older aircraft to allow for delivery delays of new equipment.

"There will… be an impact in 2018 as deliveries are sliding to the right from month to month and within the year, including Pratt Whitney-powered A320 and A321neos and [Trent] 7000-powered A330neos, all due to engine issues. A few aircraft are also shifting from 2018 into 2019," says John Plueger, ALC's chief executive, on a second-quarter earnings call.

In 2018, the lessor is due to add three A320neos and one A321neo with PW1100G engines, and four A330-900neos with Trent 7000 engines. ALC is also due to take two Pratt-powered aircraft in the second half of this year.

SMBC Aviation Capital has selected the PW1100G to power 30 of its 110 A320neos it has on order.

"There's well-published news on delays around the GTF programme for the A320neo and that has had some impact, probably more looking forward than looking back for our customers and obviously it is disappointing," the lessor's chief executive, Peter Barrett, tells *Airfinance Journal*.

Like the engine lessors, though, Barrett is confident that Pratt will solve the production and technical problems affecting the PW1100G.

He adds: "Our experience with new aircraft programmes is that these challenges do happen and, although it's disappointing, it's not hugely surprising. You tend to see a lot of it over the years."

Somewhat less confident is the ALC chairman, Steven Udvar-Hazy, who thinks the PW1100G's issues underline his longstanding unease about aircraft production rates.

"I feel compelled to reiterate our concern over stress in the supply chain, which we fear will only grow worse if production rates increase," he told investors over the summer.

Airbus plans to drive its A320 [Neo and Ceo] monthly production rate from 42 in 2016 to 60 aircraft in 2019, while Boeing plans to step up its 737 output from 42 last year to 57 a month in 2019.

Singapore-based BOC Aviation has 63 A320neo and A321neo aircraft on order, and already has delivered four Neos to operators, including one PW1100G-powered unit. So far this year, the lessor has suffered one A320neo delay due to Pratt & Whitney engine issues.

"We're always putting pressure on [them] but, at the end of the day, it's up to the manufacturers to make sure their supply chain vendors are providing the right equipment to the right quality," BOC Aviation's chief executive officer, Robert Martin, tells *Airfinance Journal*.

As with the engine lessors, however, increased demand for current-generation equipment is an upside of the PW1100G's problems.

Martin says: "We are seeing firmer rates in the second-hand market for narrowbodies… because people have now realised these delays aren't going to go away in the next couple of months and they're now taking action to make sure they've got either existing aircraft or used aircraft to replace that capacity."

An unwanted **asset**

Michael Allen, *Airfinance Journal*'s Asia finance editor, discusses the city's unloved aircraft and why its Irish expats have a reason to be happy.

Airports are supposed to be places where aircraft pick up passengers, take off and land. Aircraft are not meant to sit for years on the tarmac, rusting away.

But that is the sad fate of one lonely, unloved Boeing 767-300ER (MSN 25346) at Hong Kong International Airport.

The 1991-vintage former Transaero jet has been grounded here for almost two years without any regular maintenance, the Airport Authority Hong Kong tells me.

"We are looking for an experienced aviation specialist to obtain the maintenance record, provide the high-level specification of the aircraft and estimate the market value of the aircraft," says Ivan Cheng, senior operations officer.

The Airport Authority is applying to the High Court for the right to sell the aircraft to recoup unpaid parking fees.

An Asia-based lawyer with experience of repossessions tells me he is surprised the aircraft's lessor does not "seek recovery of a very expensive asset".

He says: "I think what a normal course would be is for the leasing company to pay off the parking fees, pay off whatever debt the airline had to the airport to get back their asset – because it can still make money for them. The leasing company can still lease it out to somebody else."

The lawyer adds: "I'm surprised that the leasing company has abandoned it pretty much."

The lessor in question is Russian company VEB Leasing, which I have been unable to reach for comment.

Another lawyer sympathises with the lessor, saying it does not make financial sense to fly such a decrepit aircraft.

"Particularly if it's out of flying condition, the cost of putting it into condition so it can fly [is not worth it]. No one is going to scrap a plane on the ground in Hong Kong airport, so how do you get it to the scrapyard from Hong Kong airport? Well, you have got to fly it. It's just too much of a headache," says the lawyer.

I asked the Airport Authority if I could visit them and the aircraft, but a press officer intervened, saying: "Please be noted that as a legal proceeding about the case is underway, we would not be able to provide any comments to your questions or facilitate your visit request."

Airfinance Journal's Fleet Tracker shows that, since 1991, the aircraft has been on the books of AWAS and BBAM, and (besides Transaero) flown with Royal Brunei and Ethiopian Airlines.

At least the poor thing has these memories to treasure before it is consigned to the scrapheap.

South Korea

I have also been researching the Korean market in the run-up to our 2nd Annual Korea Airfinance Conference in February 2018. Hong Kong branches of South Korean companies active in the aircraft financing market remain optimistic about the prospects for Korean institutional investors financing aircraft in the Middle East, despite the diplomatic dispute involving Qatar putting a dampener on some deals in the region.

In June, six countries – Bahrain, Saudi Arabia, UAE, Yemen, Libya's eastern-based government and the Maldives – cut diplomatic ties with Qatar, and Saudi Arabia withdrew permission for Qatar Airways to overfly or land in the kingdom.

"Before the breakup [between Qatar and its regional neighbours], Korean investors preferred Qatar, but now they can't do that [because of the political risk involved]," one Hong Kong-based source tells me.

Source: Hong Kong Airport

"Actually, we prefer Cathay Pacific or Singapore Airlines, but their credit is so high and the yield is so low. There is a gap between the actual yield and what you expect from the yield."

Another source adds, however, that once the geopolitical risk surrounding Qatar diminishes, the investors will come back to Qatar Airways.

Meanwhile, arrangers are hoping more portfolio transactions can be introduced into the Korean market.

In November 2016, GECAS returned to the asset-backed securitisation market with a $709 million dual-tranche offering, Labrador Aviation Finance. The deal is in the process of being sold down to Korean institutional investors.

"90% of the players are still sticking to the single asset transactions, but I believe on behalf of the Korean investors' interest, we need to introduce more portfolio transactions," says one source.

Doing portfolio transactions can also be more cost-efficient because the legal fees on a smaller or larger transaction may not be much different.

"If you do a $1 billion transaction or a $10 billion transaction, are the legal fees going to be different? No," explains one source.

Arrangers are also still trying to encourage conservative Korean investors to accept asset risk over credit risk.

"Historically, they have always looked at credit, even for real estate and shipping. That's going to be something that's hard to change. I think we have got to make them understand that the asset type might outweigh the credit," says a source.

"90% of the players are still sticking to the single asset transactions, but I believe on behalf of the Korean investors' interest, we need to introduce more portfolio transactions."

Ireland

About 5,000 Irish expats live in Hong Kong, but they have always had to suffer the indignity of transferring through London on their way home for the holidays. But not anymore after Cathay Pacific announced it will launch direct flights four times a week to Dublin from 2 June 2018 using the new Airbus A350.

At a 1 September breakfast-networking event at the Consulate General of Ireland, Hong Kong, consul general Peter Ryan told attendees he could now proudly display his model Cathay aircraft in the consulate, having previously boycotted doing so over the carrier's lack of a direct flight to his homeland. Ryan, who opened the consulate three years ago, tells *Airfinance Journal* he is keeping a keen eye on new leasing entrants to Hong Kong, and is acquainted with Irish leasing heavyweights such as Avolon's Domhnal Slattery and Orix's James Meyler.

"This new direct flight, the first from Ireland to Asia, will help the growing links between the aircraft leasing sectors in Ireland and Hong Kong as well as the wider economic ties. The upcoming industry gathering in November in Hong Kong will once again attract many visitors from Ireland – so I'll be delighted to assure them that from next year onwards, they will be able to travel by a more direct route," he says.

Cathay seems to be betting that leasing industry executives required to travel between Hong Kong and Dublin jump at the chance of flying the direct route. In its press release announcing the new service, the airline mentions how Dublin is "a global hub for the leasing and finance of aircraft, a status that Hong Kong, following recent tax legislation, is on course to emulate."

Cathay would not be drawn on whether it hopes to sell seats to aircraft financiers and lessors travelling for business between these two cities. An airline spokesperson says: "We welcome all travellers for business or leisure purposes. We just state the fact that Dublin is a leasing hub."

One Irishwoman at the breakfast had already booked her flight for next summer, bagging a round-trip economy fare for about HK$5,000 ($639), she said.

"Just don't tell my mum about the new flight," joked another attendee.

China

Meanwhile, on the Hong Kong Stock Exchange, flag carrier Air China proposed some peculiar amendments to its articles of association.

The Chinese flag carrier is seeking shareholder approval to establish a party committee. While Communist Party intervention in state-owned enterprises (SOEs) is no secret, this is – says the *Financial Times* – the first time the party rather than the government has been named in SOEs' central documents.

Air China is not alone and the issue is spread wider than the aviation industry: more than 30 Hong Kong-listed state-owned enterprises have written the party into their articles of association, says the newspaper.

Among other things, the party committee will "assume full responsibility for enforcing the strict discipline of the Party [and lead] the company's ideological and political work, the front unification work, building of spiritual civilisation as well as building of corporate culture, and lead mass organisations such as the labour union and the Communist Youth League."

Air China does not deign to define in the filing such puzzling phrases as "spiritual civilisation" and "front unification work", which smack of the typical Chinese Communist sloganising that always translates poorly into English.

The implications for state-owned Chinese airlines and lessors is at this stage unclear, but this should serve as a wake-up call to investors and other market participants that no matter how globalised we like to tell ourselves the aviation industry is, Chinese companies play by a different rulebook to their western counterparts – and answer to different masters.

Motions to set up party committees have not always gone down well with shareholders. The *Financial Times* reported in January 2017 that minority shareholders in Chinese developer Tianjin Realty Development rejected a plan to establish a Communist Party committee in a "rare revolt" against efforts to strengthen the party's grip on state-owned groups.

Bocomm Leasing's parent, Bank of Communications, is also proposing similar amendments to those of Air China.

The true power of the party committee is implied in one proposed article amendment in Bocomm's exchange filing: "Before making decisions on material issues of the Bank, the Board of Directors shall consult with the Party Committee for their opinions," it says.

If it were not for the Hong Kong Stock Exchange English-language disclosure, some non-Chinese companies doing business with these entities may have not even noticed the amendments, because they were mostly announced in Chinese only – which one suspects to be a deliberate move (why did they not prepare an English press release?).

Some goals of the party committees – like rooting out corruption – are certainly beneficial to the aviation industry, notwithstanding the heavyhanded methods of China's president, Xi Jinping, and anti-corruption czar, Wang Qishan. Corruption benefits only the corrupt, to the detriment of the market as a whole.

But this legal incorporation of the Communist Party's role in SOEs will sit uneasily with western companies which are used to the rules of free market capitalism, not "capitalism with Chinese characteristics".

One source from a major western leasing company says it shows how powerful Xi Jinping has become.

"I guess it's just a mode of control, but it does make the market more uncomfortable," says the source.

HK Express weathers typhoons and engine troubles

Chief executive officer Andrew Cowen bemoans Pratt & Whitney engine problems on the A321neo, and tells **Michael Allen** his airline is not in such a rush to jump into widebodies.

HK Express has had a busy summer contending with disruptions both natural and man-made.

The HNA Group-owned carrier's home city of Hong Kong has been battered by three typhoons (although there could have been more by the time *Airfinance Journal* is published) – including the so-called Typhoon 10, only the second of its strength this century – grounding and delaying flights. On top of that, the low-cost carrier has had aircraft on ground (AOG) as a result of issues with Pratt & Whitney engines on the Airbus A320neo.

Despite these challenges, the carrier's chief executive officer, Andrew Cowen, appears sanguine at his airline's offices at Terminal 2 of Hong Kong International airport. The airline also has offices in nearby Tung Chung, and Cowen often has to move back and forth between the two.

Although he is "very happy" with the fuel burn on HK Express' Neos – he sees fuel burn improvements of at least 18% and sometimes edging towards 19% to 20% – Cowen says this has to be looked at against the reliability of the engine, particularly with regard to the "No 3 bearing issues" (see box) that resulted in one of HK Express' Neos being grounded about 40% to 50% of the time.

"We've only just had one of those AOGs back in service in the last few days after about three weeks of ground time. It's this No 3 bearing issue – problems with Pratt & Whitney providing spare engines to replace – so very, very frustrating," he says.

So frustrating, in fact, that HK Express declined to accept delivery of two aircraft in May and June, pending comfort from Pratt & Whitney that they had a clear plan to address the reliability issues of the Neo and had a proper support arrangement in place.

"What I didn't want to do is take those two Neos and be dealing with more AOGs," says Cowen, adding he is still deciding when to take the aircraft, and may do so later this year.

Cowen declines to reveal whether Pratt & Whitney has offered any compensation for the engine problems, saying only that "all the parts concerned and the repairs are under warranty, so we are protected in that respect".

He adds: "We have obviously been in discussions with Pratt & Whitney and come to an agreement about our support package, but I can't, forgive me, go into the details of that."

Fleet

Although the airline has had problems with the introduction of the Neo, the addition of other Airbus narrowbodies is going smoothly. Two A321s arrived in September, with the seventh of 12 aircraft of that type arriving on 8 September. The airline expects two more this year, including one in October. The remaining three will deliver in 2018.

The addition of these aircraft is helping HK Express exit the five CFM-powered A320s with 174 economy seat configuration that were subleased from Hong Kong Airlines in 2013 as part of HK Express' restructuring into a low-cost carrier (LCC). The final of those five aircraft will soon leave the fleet. HK Express will sub-lease three to fellow HNA-affiliated carriers Guangxi Airlines (MSNs 4970, 5260 and 5266) and two to Tianjin Airlines (MSNs 5264 and 5341).

Two more IAE-powered A320s will exit the fleet in November as part of a further plan to exit non-standard specification aircraft.

Excluding the five CFM-powered aircraft, HK Express has a fleet of 21 aircraft, comprising three A320neos, seven A321s and 11 A320s. By the end of this year, the airline expects to grow its fleet to 22: five A320neos, nine A321s and eight A320s.

HK Express is looking to end 2018 with 32 aircraft: 12 A320neos, 12 A321s and eight A320s.

Cowen says he has to alter the fleet plan slightly depending on what slots HK Express gets from slot-constrained Hong Kong International airport.

"We've got this ongoing market opportunity – great, fantastic, really pleased with all the demand we are receiving – and there are lots of destinations we want to fly, but really the big capacity constraint is the slots here in Hong Kong. The airport is working hard to release slots, but it's just the big infrastructure constraints ahead of the third runway," he says.

Widebodies

More slots will become available once the airport's under-development third runway opens in 2023, but until then airlines will have to come up with creative solutions to the slot constraints.

One option is for airlines to introduce widebodies. Hong Kong International airport already has the highest usage of widebody aircraft in the world (62.5%) – Tokyo Narita has 60.9% and Dubai International Airport 56.7% – according to Airport Authority of Hong Kong data.

An interview published on 5 September by newswire *Reuters* states that HK Express "plans to add widebody aircraft to its fleet eventually to make use of limited airport slots and allow for growth to longer-range destinations".

Without referring explicitly to this report, Cowen says media coverage about this has been "slightly exaggerated" and HK Express has made no "definitive decision". He clarifies there are "three or four strands" to HK Express' thinking on widebodies.

"Obviously, we monitor and think about what leading LCCs are doing. A number of those have extended into widebodies. We think very carefully about the infrastructure constraints here in Hong Kong and how best we can adapt to them, and certainly one possibility to that is, if we are faced with slot constraints – but we've still got significant market demand – then widebodies are a possible scenario," he says.

"Certainly, widebodies give you more range and more seats [but] you've got to be sure you can fill the seats at a reasonable yield, and you've got to be pretty well sure you can cover the trip cost, so it's these sorts of considerations – infrastructure versus much higher trip cost issue."

Andrew Cowen, chief executive officer, HK Express

He notes how HK Express has four flights a day to Tokyo Narita and two to Tokyo Haneda, as well as another four or five to Osaka-Kansai and four to Seoul-Incheon. Putting a widebody onto some of those slots would be a "very rational scenario consideration", says Cowen.

"That said, we are very early in any analytical work and we are a long way from any decision – if at all. It may be easier for us to just keep going with narrowbodies. At the same time, certainly directionally, if we can make the numbers work and we are comfortable with the risk of moving up to widebodies, then it's something we would consider.

"I don't know any business that doesn't think forward and plan ahead, especially in aviation so, of course, we would look at the options. Certainly, in Asia, infrastructure constraints must lend a bias towards larger aircraft – it must do. This is just logic. It's not the same as a definitive decision has been made."

Among the widebodies on offer, Cowen speaks highly of the Boeing 787 Dreamliner (without stating a preference for any specific variant), which he says seems to have got through its "teething troubles". The Boeing-manufactured aircraft was ordered grounded by the US Federal Aviation Administration after problems with the model's battery and electrical system.

"A lot of carriers are very happy with it. I've been on it myself; it's a very nice aircraft. From a widebody perspective, we would certainly look at the 787, the A330neo realistically and the A350. Probably not the 777 because of its sheer size," says Cowen.

But operating widebodies comes at a considerable cost compared with narrowbodies. Cowen notes how some flag carriers operate A330s in a 240-seat or 280-seat configuration, giving them just 10% more seats than an A321 but with at least double the trip cost.

HK Express operates high-density low-trip-cost A321s on its thick routes, which include Tokyo-Narita, Tokyo-Haneda, Fukuoka, Osaka-Kansai, Seoul-Incheon, Siem Reap, Da Nang and Ningbo.

"Certainly, widebodies give you more range and more seats [but] you've got to be sure you can fill the seats at a reasonable yield, and you've got to be pretty well sure you can cover the trip cost, so it's these sorts of considerations – infrastructure versus much higher trip cost issue," says Cowen.

One LCC that has used widebodies effectively, says Cowen, is Philippine's Cebu Pacific, which operates the A330-300 with about 436 seats – a configuration billed in 2014 as "the world's most cramped long-haul A330" by website AirlineRatings.

"If you don't like the seat density on a narrowbody you're not going to like this," admits Cowen, but he says that overall it is "full marks to Cebu".

He adds: "If you're neither here nor there – especially for a short-haul route – then it's the same... They don't fill the fuselage with all the full-service accoutrements of extra galleys and toilets and screens and curtains and things like this... Actually, what we notice is space around our middle; we're not so interested in our legs unless our legs are absolutely trapped and cannot move."

While passengers from richer countries might balk at a nine-hour Philippines-Australia flight on a 436-seat A330, those who are less well off might be more willing to bear the temporary discomfort.

"So many travellers in those [developing south-east Asian countries] are so acutely cost-sensitive. We don't think for a minute about our Starbucks," says Cowen, gesturing to the takeaway coffees on the table in front of us.

"I just feel like a Starbucks and go and get one, and you just dig the money out of your wallet. For lots of people, what we pay on our Starbucks might be their meal for the day. We underestimate that price sensitivity… so we really applaud any cost reduction because it just emancipates more people and enables more people to travel by air. In Asia, where you've got such vast distances and no real alternative other than the rail network in China, Japan and Korea you have to fly – don't you?"

Leasing and financing mix

All of HK Express' aircraft are leased. Cowen says that buying aircraft is something HK Express would like to move towards doing, but does not give any specific timeframe.

He points to the upcoming IFRS 16 accounting change that capitalises leases onto airlines' balance sheets as an incentive to start financing over leasing. He says one of the problems with leasing is that it "traps a lot of cash".

Cowen says: "You are trapped into lease deposits and maintenance reserves and all the rest of it. If you buy an aircraft, you've trapped a lot of cash there as well – the purchase price of the aircraft – so you've got to weigh that up as well."

> *"You are trapped into lease deposits and maintenance reserves and all the rest of it. If you buy an aircraft, you've trapped a lot of cash there as well – the purchase price of the aircraft – so you've got to weigh that up as well."*
>
> **Andrew Cowen**, chief executive officer, HK Express

He adds: "We are always looking at how we can improve and maximise our balance sheet. We don't have a fixed ideological position on this, but now that I've got through the first couple of years [as chief executive officer] and got a reasonable size fleet, the purchase of aircraft could certainly come into the equation."

The rapid growth of the Chinese leasing market on its doorstep affords HK Express no lack of leasing options. The fact the airline likes Chinese lessors is evident from its fleet data: five aircraft from Bocomm Leasing and two from CMB Financial Leasing. If you count Singapore-based BOC Aviation and Dublin-based Avolon as Chinese lessors (both their parent companies are Chinese), then the majority of HK Express' fleet is leased from the Chinese market.

Cowen says he is "always a little bit baffled" by western lessors' risk management committees.

"You've got LCCs taking market share hand over fist from full-service carriers and far more resilient in business downturns and so on, yet the credit risk attached to LCCs is higher than full-service carriers. Now, of course, there are lots of full-service carriers who are extremely profitable and deserve theirs, but I don't understand why apples versus apples full-service carriers tend to have a higher credit rating than LCCs when they are losing market share hand over fist" he says.

"I don't know what our credit risk assessment is amongst lessors, but I would say HK Express is the only LCC based in Hong Kong, one of the leading cities in the world with infrastructure constraints, and with the biggest air market in the world on its doorstep – that leads to a cautious credit rating, does it? How's that then?

It sort of seems like analysis paralysis a bit."

Increasing appetite in **Islamic market**

Sharia-compliant aviation financing has always been a relatively niche market but has been a vital source of capital for airlines in the Middle East. **Jack Dutton** looks into the pros and cons of Islamic financing.

Although Islamic financing in aviation has always been niche, it is an increasingly popular alternative financing option for airlines and lessors. There have been at least 30 Islamic aviation finance deals since the beginning of 2013, according to *Airfinance Journal*'s Deal Tracker and responses to our Islamic financing survey.

"It has been a slower start to the year compared to last year but the volume of deals is now picking up and the fourth quarter is now looking to be quite busy," says Mario Jacovides, partner at Allen & Overy, who has worked on several Islamic-compliant transactions.

"A number of new deals, particularly in the Middle East, have now picked up and are expected to close in the coming months. We continue to see ijarah leases but also other Islamic products, including murabaha facilities," he adds.

The back end of 2016 was particularly busy in the Islamic finance market. In November, Abu Dhabi-based Etihad raised $1.5 billion with its debut sukuk, marking the largest aviation capital markets deal in the Middle East and North Africa region. The deal was initially indicated to have an issue size of $500 million, but the airline decided to upsize the offering after a strong demand for the facility. The transaction was the largest non-sovereign sukuk and the largest sukuk out of Abu Dhabi.

Airlines may opt for sukuks to boost their equity for asset financing. Another notable sukuk deal in aviation finance closed in April 2015, when Emirates raised $913 million. The issuance was guaranteed by UK Export Finance, the export credit agency of the UK government. Proceeds of the issuance were used to fund four new A380 aircraft, which delivered in April, May, June and July 2015. The aircraft are on finance lease and operated by Emirates. The transaction marked the first time a sukuk had been used to prefund an acquisition of aircraft.

Oliver Tebbit, a partner at Watson Farley & Williams based in the firm's Dubai office, says that some airlines the firm speaks to have been interested in issuing sukuk bonds.

"An increasing amount of liquidity is now being put through Islamic-structured funds and some of that is going into the aviation market," he tells *Airfinance Journal*. "Are we seeing significant numbers of Islamic-structured financing transactions for the airlines we are currently working for? No, but I do think there's an appetite."

Some carriers choose to use Islamic financing more than others.

"100% of Saudia's financing has to be sharia-compliant," according to Mylène Scholnick, principal at ICF. "It's a major source of financing for them and the airport. Whereas in comparison, when you look at Emirates, it's not at all 100% of their financing, it's a comparably smaller portion – around 2-3%, but that has grown with their capital market access via their sukuk."

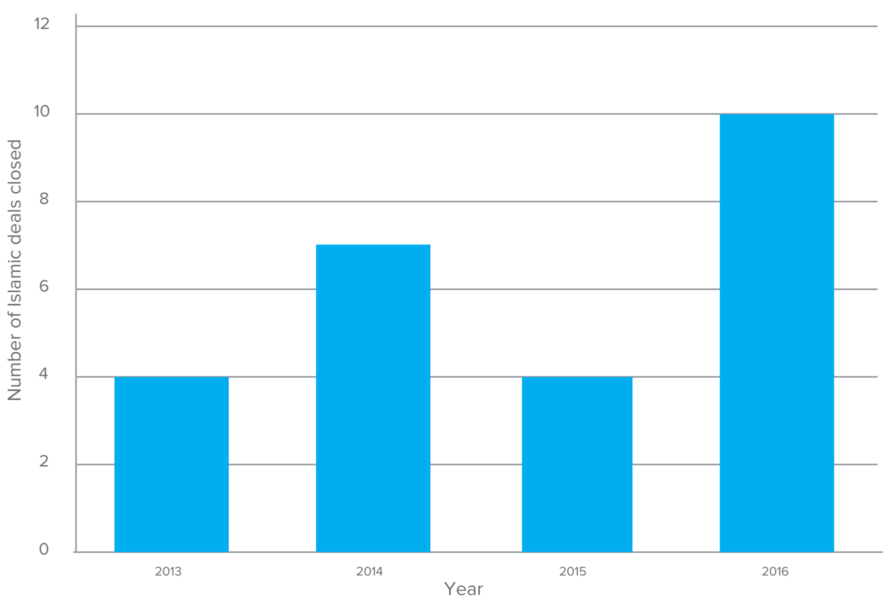
Ijarah leases are another popular form of Islamic financing. One recent notable deal closed between August 2016 and 31 December 2016, when International Airfinance Corporation (IAFC) completed 50 exclusive operating leases to Saudi Arabian flag carrier Saudia. The deal consisted of 30 new Airbus A320s and 20 new A330-300s with various deliveries starting from the third quarter of 2016. The A320s are on 12-year leases and the A330s on 15-year leases.

> *"An increasing amount of liquidity is now being put through Islamic-structured funds and some of that is going into the aviation market."*
>
> **Oliver Tebbit**, partner, Watson Farley & Williams

The total transaction size was $3.5 billion spread over three years. IAFC claims the transaction to be the largest aircraft leasing transaction in the history of Saudia and the largest aviation deal to be secured via Islamic financing.

Market sources say the lessor is looking to close a similar deal with Saudia later this month, amounting to $700 million financed by six banks: Dubai Islamic Bank, National Commercial Bank, Gulf International Bank, Arab National Bank and two other Saudi banks are the lenders. The leases are sharia-compliant and will be structured as ijarahs.

Number of Islamic finance deals closed (2013-2016)



Based on Airfinance Journal's Deal Tracker and inputs for the 2017 Islamic survey.

Trying times for airlines

Although there are a few Islamic deals in the pipeline, one source that is active in the sharia-compliant market says there may be fewer Islamic structures in the short term. Noting the big three Gulf carriers, the source adds that Etihad will not likely return to the bank market much after the insolvencies of two of its equity partners, Alitalia and Air Berlin, this year.

The source adds that Emirates is looking to postpone some of its orders, so although the airline will still be doing deals, the frequency of deals looks likely to decrease.

"Airlines in the region have found the last 12 months difficult," adds Watson Farley & Williams' Tebbit. "Load factors are lower and low oil prices don't really help the airlines over here; it just means that the people who are based locally are travelling a bit less and there's a certain oversupply of the aircraft from the airlines' perspective.

"They've committed to taking greater numbers of aircraft than they can fill or at least fill to the degree that they need to try and keep profitable. Airlines have been trying to delay some deliveries and that's obviously going to impact the number of financings that get done as well."

Local liquidity squeeze

There are also challenges that the Islamic banks face. Some of the European and Asian banks have been quite aggressive on pricing, often leading to more competitive financing being available elsewhere. As well as this, the low oil prices have had an impact on the local banks' ability to lend and the cost of capital from the banks has also gone up in the market as a whole.

Tebbit also says that Middle Eastern banks have targeted the aviation sector quite aggressively over the past four to five years and are now showing signs that they are starting to hit their lending limits.

"The GCC [Gulf Cooperation Council] banks are under more pressure to not do lending at the moment," he adds. "They're trying to sit on their reserves a bit more than they have done in the past five years. Over the last 18 months, I'd say that local banks are doing a bit less lending but the levels of the liquidity in Islamic funds is perhaps a little bit higher than it was."

With the Middle East being under economic and political pressure, airlines have to be more creative with their financing. Although the oil price is not as high as those governments would want it to be, it has been at a steady level at about $50 a barrel for the past four months, giving more support to Islamic financings and the banks' spending plans going ahead.

Despite these obstacles, an Islamic financier tells *Airfinance Journal* that the Middle Eastern banks are not shying away from aviation financing.

"We are still willing to look at it. The problem is that, for example, if an airline like Oman Air is coming up with new plans for 787s, they don't have projections. Emirates is the only airline here which runs on its own; everybody else relies on the government. So, if Oman Air says that it needs financing and the government is not willing to stand behind it, all the bankers will shy away because it's not making money."

Instead of looking at whether the issuer is based in a Muslim country, says the source, Islamic banks focus on the creditworthiness of the airline, with a particular emphasis on whether it is sovereign-controlled or controlled privately. A state-controlled airline such as Kuwait Airways is much more likely to be kept afloat by a government if it was to go bust than an airline that is privately owned.

"There was so much demand for the Etihad sukuk," says the source. "You know why? Because Etihad is backed by Abu Dhabi. There is no hard-and-fast rule that we prefer only Muslim countries. We prefer any airline which is doing well and we are willing to support that."

Pricing problem

Although there appears to be appetite from the funding side for aviation, a problem for the Islamic banks is that many of the airlines cannot understand the financing structures.

"I'd love to finance Singapore Airlines or Cathay Pacific," says the Islamic financier. "What is stopping them is that they don't understand Islamic structure. For them, the convention is so easy. We've tried to explain it to them that it is not so difficult."

Marc Bourgade, chief executive of Stellwagen Finance, a company that has closed four Islamic deals in the past 18 months, says: "I was talking to an Islamic bank and they were looking for new transactions, so I think there is liquidity in the Islamic financing market. I think it's a question of finding the right deal for them.

"I'm not sure the Islamic banks are the most competitive ones in terms of cost of funds because you have a lot of European and Asian banks that are very competitive."

> *I'd love to finance Singapore Airlines or Cathay Pacific. What is stopping them is that they don't understand Islamic structure.*
>
> **Islamic financier**

ICF's Scholnick adds: "I think the pricing is a little bit higher [in Islamic financing] but if you compare it to an EETC [enhanced equipment trust certificate] that is done in the US, then it's obviously more expensive. But it gives the banks in the Middle East an opportunity to be involved in aircraft financing and it diversifies the airline's pool of banks they go to."

Allen & Overy's Jacovides says that pricing is not always the determining factor when it comes to airlines selecting Islamic financing deals.

"It's more a question of to what extent certain airlines like to diversify their funding sources, particularly those with large orderbooks who are more prepared to look at the full array of financings available in the market," he says.

Tebbit adds that Islamic structures often require more management and are typically a little more expensive than conventional structures.

Untapped potential

Tebbit believes that the growth of Islamic funds is a positive sign, despite restrictions in the lending capacity of GCC banks.

"People are trying to look for a return on assets; banks aren't giving them a return and retail as well as industry investors are being offered opportunities, being offered better returns if they park money in sharia-compliant funds. Whether they are used for real estate, for aviation or for shipping, I think there are slightly better returns than the banks in the region are able to offer."

Jacovides says that the market will open up more as other Islamic banks become more interested in aviation.

"It's certainly much easier to document these Islamic deals now as the documentation is becoming more streamlined and they now follow a particular path. The market is getting more used to seeing Islamic deals, not just by themselves but also combined with other products. As more of these deals come to the market, more people will become comfortable with them."

Jacovides adds that he is now seeing some of the traditional aviation finance banks, such as European banks, co-investing with Islamic banks on these deals. He says that this is either because the traditional banks have country or airline limits that are nearing their capacity, or by combining traditional debt with Islamic structures it offers the airline a more competitive overall package. Although they are innovative, often these structures have a higher leverage than traditional financings.

An Islamic financier agrees that many of the traditional aviation finance banks are reaching their liquidity limits and, in response to this, he is aggressively pitching sukuks to airlines.

"How much 12-year funding can you do continuously?" asks the financier. "All the banks will get full up. It is better to take out the bilateral club deals with the sukuk so that other sets of investors can come in; so that these lines that are being choked for 12 years can be freed."

He adds: "These airlines have to understand that for the overall cost of 12-year money, I can go buy a sukuk for 10 years and make money that is tradable and liquid."

How Islamic finance works

Sharia-compliant or Islamic law prohibits the payment of "riba" or interest, meaning that debt instruments that are typically used in western transactions cannot be used as investment vehicles in Islamic finance. The other main principle of Islamic financing is that the profit and loss is shared.

With a *sukuk* bond, the issuer sells the investor group a certificate and then uses the proceeds to purchase an asset, in which the investor group has partial ownership. In the contract, the issuer also has to agree to buy the bond at a future date at par value.

For example, a *murabaha* loan is interest free and involves an intermediary buying and maintaining ownership of the asset until the loan is paid in full. A set fee is charged instead of interest. A *murabaha* is made up of two transactions: the bank purchasing the asset, and the client agreeing the repayment schedule for repurchasing the asset.

Ijarah leases work in a similar way to a conventional operating lease, but the lessor must own the assets for the full lease period and if the lessee defaults on payments or delays payments, the lessor cannot charge compound interest. The first lease rental must be fixed, it cannot be linked to a rate such as Libor, but later rentals can be variable. The lessor is also responsible for maintaining and insuring the aircraft, in a similar way to a wet lease.

Islamic deals 2013-2017

Borrower/ Issuer	Structure	Amount ($)	Banks	Lawyer	Country	Use of Proceeds	Aircraft	Financial Close Date
ALAFCO	Murabaha	300m	KFH Capital Investment, Warba Bank, Boubyan Bank, Kuwait International Bank, ABC Islamic Bank	N/A	Kuwait	General corporate purposes	N/A	Sep-17
Veling	Ijarah	N/A	Dubai Islamic Bank, State Bank of Mauritus	Clifford Chance, K&L Gates, Pillsbury	Mauritus	Aircraft purchase	1xA380	Jul-17
Veling	Ijarah	N/A	Dubai Islamic Bank, State Bank of Mauritus	Clifford Chance, K&L Gates, Pillsbury	Mauritus	Aircraft purchase	1xA380	May-17
Stellwagen Finance	Ijarah	N/A	Dubai Islamic Bank	N/A	United Arab Emirates	Aircraft purchase	1xA380	Feb-17
Kuwait Airways	Other	N/A	Kuwaiti General Reserve Fund	N/A	Kuwait	Aircraft purchase	6x777-300ER	Jan-17
International Airfinance Corporation	Ijarah	3.5 billion	National Bank of Abu Dhabi, Arab Banking Corporation	Allen & Overy, HFW	United Arab Emirates	Aircraft purchase	30xA320, 20x A330-300	May-16
Etihad Airways	Sukuk	1.5 billion	HSBC, JP Morgan, National Bank of Abu Dhabi	Allen & Overy, Clifford Chance	United Arab Emirates	General corporate purposes	N/A	Nov-16
Stellwagen Finance	Murabaha	N/A	Stellwagen Finance, Caixabank, Bankinter, Banco Popular, Noorbank	Pillsbury, Apple Bank, Walkers, Allen & Overy, Bird & Bird, Clifford Chance	Ireland	Aircraft purchase	1x777-300ER	Sep-16
Investec	Murabaha	N/A	Investec Bank	Bird & Bird, Clifford Chance	United Kingdom	Aircraft purchase	1xA380	Aug-16
Malaysia Airlines	Sukuk	750m	CIMB Investment Bank	N/A	Malaysia	General corporate purposes	N/A	Jul-16
Novus Aviation Capital	Ijarah	N/A	Qatar First Bank	N/A	United Arab Emirates	Aircraft purchase	2x737-900ER	Jun-16
Stellwagen Finance	Murabaha	N/A	Dubai Islamic Bank, Commercial Bank of Dubai	Allen & Overy, Clifford Chance, Maples & Calder, Pillsbury	Ireland	Aircraft purchase	2xA380	Jun-16
EMP Structured Assets	Murabaha	210m	Dubai Islamic Bank	Clifford Chance, Allen & Overy, Mason Hayes & Curran, Pillsbury	Germany	Aircraft purchase	1xA380	Feb-16
Garuda	Sharia-compliant bridge loan	400m	National Bank of Abu Dhabi, Dubai Islamic Bank	N/A	Indonesia	General corporate purposes	N/A	Feb-16
Royal Jordanian Airlines	Sharia-compliant dual tranche loan	275m	Mashreqbank, Al Khalij Commercial Bank, Arab Bank, Dubai Islamic Bank PJSC, The Commercial Bank, Arab Jordan Investment bank, Bank Al Etihad	Dentons, Kurdi	Jordan	General corporate purposes	N/A	Feb-16
PIA	Secured Islamic facility	120m	Citi and Mashreq Bank	N/A	Pakistan	General corporate purposes	N/A	Oct-15
Kuwait Airways	Murabaha	400m	NBAD, ABC	N/A	Kuwait	Aircraft purchase	5xA330-200	Jun-15
Garuda	Sukuk	500m	ANZ, Deutsche Bank, Dubai Islamic Bank, Standard Chartered	Allen & Overy, Clifford Chance	Indonesia	General corporate purposes	N/A	May-15
Emirates Airline	Export credit guaranteed sukuk	913m	Citigroup, HSBC, JP Morgan, National Bank of Abu Dhabi,	Allen & Overy, Clifford Chance, Hogan Lovells, Norton Rose Fulbright	United Arab Emirates	Aircraft purchase	4xA380	Mar-15
Etihad Airways	Ijarah	N/A	First Gulf Bank	Allen & Overy	United Arab Emirates	Aircraft purchase	1xA321-200	Dec-14
Flydubai	Sukuk	500m	HSBC, Standard Chartered, Emirates NBD, National Bank of Abu Dhabi, Dubai Islamic Bank, Noor Bank, CA-CIB	N/A	United Arab Emirates	General corporate purposes	N/A	Nov-14
Ethiopian Airlines	Ijarah	N/A	Export Development Canada (acting as a lender)	Allen & Overy	Ethiopia	Aircraft purchase	4xQ400	Sep-14
Emirates Airline	Ijarah	N/A	Dubai Islamic Bank, Abu Dhabi Islamic Bank, Commercial Bank of Dubai	N/A	United Arab Emirates	Aircraft purchase	2xA380	Aug-14
Emirates Airline	Ijarah	N/A	Dubai Islamic Bank, Abu Dhabi Islamic Bank, Commercial Bank of Dubai	Clifford Chance	United Arab Emirates	Aircraft purchase	2xA380	Jul-14
Garuda	Islamic facility	100m	Bank Internasional Indonesia	N/A	Indonesia	General corporate purposes	N/A	May-14
Sri Lankan Airlines	Murabaha	150m	Standard Chartered, Abu Dhabi Islamic Bank, Al Hilal Bank, Noor Bank, United Bank	N/A	Sri Lanka	General corporate purposes	N/A	Apr-14
PIA	Secured Islamic facility	130m	Alubaf Arab Bank, Bank Alfalah, Citi, National Bank of Pakistan, United Bank, Warba Bank	Clifford Chance, HMCOBNR	Pakistan	General corporate purposes	N/A	Nov-13
Emirates Airline	Ijarah	N/A	Abu Dhabi Islamic Bank	Clifford Chance	United Arab Emirates	Aircraft purchase	2x777-300ER	Jun-13
Etihad Airways	Ijarah	359m	First Gulf Bank	N/A	United Arab Emirates	Aircraft purchase	2x777-300ER	Apr-13
Emirates Airline	Sukuk	1 billion	Standard Chartered, Citigroup	Allen & Overy, Linklaters, Walkers	United Arab Emirates	General corporate purposes	N/A	Mar-13

Based on *Airfinance Journal's* Deal Tracker and inputs for the 2017 Islamic finance survey.

At home with **the Fokkers**

Alliance Airlines CEO Lee Schofield went from playing handball in Sweden to running an all-Fokker Australian airline. He tells **Michael Allen** how he ended up there and explains the appeal behind the ageing passenger jets.

Lee Schofield has a special perspective on the airline industry, having worked for six years for a Swedish lessor 13,000 miles from his homeland.

"That divide from lessor to operator is probably not a transition that many people make," the chief executive officer of Australian carrier Alliance Airlines tells *Airfinance Journal*.

"One of the real advantages of having been on the leasing side is when you're doing transactions you're obviously visiting a significant number of operators and seeing the good, the bad and the ugly from the outside of various operators and particularly how they transition aircraft, how they select aircraft and, to some extent, how they operate them."

Schofield entered the aviation industry by chance. Having started his career as a lawyer in Australia for Brown & Co Solicitors and Consultants doing general commercial law work as well as specialty sports law, he moved to Sweden in 2005 to play handball.

"I found only playing sport wasn't for me. A balanced life across sport, profession and family suited me better," says Schofield.

Through his handball contacts, he met Sven Holmgren, Volito Aviation Services' general counsel, who gave him a job in February 2005.

He returned to Australia in June 2011 to join Air Australia (also known as Strategic Airlines), part of whose team he had met during his travels as an aircraft lessor. Unfortunately, the airline went bust just seven months after he joined.

"However, the positives were that I learnt a great deal in a very short space of time and that it lead me to Alliance in June 2012," says Schofield.

Acquiring the Fokkers

Schofield is now overseeing Alliance's introduction of 21 Fokkers from Austrian Airlines.

In November 2015, Alliance agreed to pay $15 million for 21 Fokkers (15 Fokker 100s and six Fokker 70s) from Lufthansa subsidiary Austrian Airlines (which owns 8.27% of Alliance). During the 2017 financial year, Alliance took delivery of three aircraft. One has been introduced into service in Australia, while another will be introduced in the 2018 financial year. The engines and other components of the third aircraft have been used for leasing.

Most recently, Alliance bought a 1995-vintage Fokker 70 from Rijksluchtvaartdienst, an organisation responsible for keeping a register of all aircraft in the Netherlands.

Alliance Airlines (formally known as Alliance Aviation Services) began as a private company with just five staff, but listed in Australia in 2011 and posted a net profit of A$19.6 million ($15.5 million) for the year ended 30 June 2017. The company provides charter services to a range of sectors including tourism and resources, and also provides wet leasing to Virgin Australia and others.

"We are taking a very long-term view of flying Fokker aircraft in our own operation and we are increasingly soaking up that capacity that's coming out of other operators, buying them both for use in our own fleet, or to break down into parts and spare engines to support the fleet and provide an ongoing cost base," says Schofield.

Besides Austrian, several other Fokker operators are phasing out the ageing aircraft type, upgrading to newer-generation kit offered by the likes of Embraer and ATR.

But Schofield believes an all-Fokker fleet will best serve Alliance well into the next decade.

"While, on a calendar basis, you could say they are ageing aircraft, we still see a 10-year economic use of the aircraft. One of the reasons the aircraft are uniquely suited to us is we have a fairly low utilisation due to the nature of our charter operations. That's why low capital cost is a significant advantage," he says.

"Given our low utilisation, we're only just a third of the way through the useable life of the aircraft, so we will never ever reach a physical obsolescence. It will be economic drivers that lead us into another aircraft type, but that point of time will be 10 years from now."

Maintaining the aircraft

In a 2015 interview with *Airfinance Journal*, Dutch regional carrier KLM Cityhopper's managing director Boet Kreiken described Fokkers as "sturdy aircraft" with a "relatively low depreciation", while cautioning that

"One of the real advantages of having been on the leasing side is when you're doing transactions you're obviously visiting a significant number of operators and seeing the good, the bad and the ugly from the outside of various operators and particularly how they transition aircraft."

Lee Schofield, chief executive officer, Alliance Airlines

maintenance and engine overhaul costs needed to be considered.

"It's all about the number of cycles left on the engine and what the buyer intends to do with the aircraft," Kreiken said at the time, adding: "If you overhaul the engines you have a fantastic aircraft but the vital issue is the life-cycle spans of the engines. Fokkers are cheap, efficient and good aircraft, but you have to invest in the engines for the cycles." KLM Cityhopper no longer operates Fokkers, having phased out its last Fokker 70 in September 2017.

Schofield agrees with Kreiken, saying it is one of the reasons why Alliance on 27 March 2012 entered into a long-term TotalCare agreement with Rolls Royce for the Tay 650 engines on the Fokker 100 fleet.

The Fokker 70's engine – the Tay 620 – is slightly smaller. Alliance prefers to find opportunities to buy engines at "very attractive pricing, so we're... effectively able to buy part-life engines and use those, and that's more effective than putting it through the shop at present as we go through the life of the aircraft", he says.

For airframe maintenance, Alliance made an agreement in 2014 with Austrian Airlines Technik-Bratislava (ATB), taking advantage of ATB's idle slots and the fact that Alliance's business does not have the same seasonality of many European operators. Despite the fact that the Fokkers need to be flown all the way from Australia to Slovakia for this maintenance, Schofield still believes it is a "compelling proposition".

"Given that ATB were performing the heavy maintenance on the Austrian Airlines Fokker fleet, they obviously know a number of airframes we now fly. They know them intimately and have maintained them for 20 years in some cases."

As much as Schofield is convinced of the Fokker's merits, he says he and his Alliance colleagues do not have their "heads in the sand".

"We always have a look at what the availability is like in other types. We pretty regularly test our economics against what is available to see where we are at," he says.

"At this point in time, there is still a pretty significant cost delta that means that a new type doesn't make the same sense as the same Fokker aircraft – so it is primarily a financial driver, but there is also a significant operational benefit in having a single type." Although Alliance has one Fokker 50 turboprop operating in New Zealand, the airline otherwise operates only jets. The F70s and F100s are of the same type certificate and the "level of simplicity and the operational benefit that comes with that" should not be underestimated, says Schofield.

Financing the aircraft

Opportunities for international financiers to pitch their services to Alliance may be limited, because the airline now uses only domestic banks Australia and New Zealand Banking and Commonwealth Bank of Australia to fund itself.

"On a holistic view, we do have access to debt, but it's not a specific aircraft finance. We don't go and draw down 80% of the value and finance the aircraft there; it's a pool of finance for our whole operations. The Austrian deliveries that are coming now are effectively being financed out of operating cash flow," says Schofield.

The reason Alliance has not tapped other funding sources is "simply because we haven't needed to", having been able to finance its growth through core debt and operating cash flow.

Demise of the Fokkers

As much as they may be loved by Alliance, the Fokkers – like all aircraft – cannot last forever and must be phased out eventually.

"In the short- to mid-term we will do some trading in the aircraft we have, but when you get to that long term end-of-life, our assumption is that they will be parted out. I would envisage we would actively part out a small number of aircraft originally to support the ongoing operation of what remains, and you have a transition out over a number of years as a replacement type comes in," explains Schofield. "Realistically, any of the 100-seat regional jets could be a replacement from an operational perspective. However, probably the most important consideration is the financial aspect and the balancing act between capital cost and ongoing maintenance cost. External parties often suggest that the Embraer E190 is the logical candidate. That is a possibility but we keep a close eye on all of the possible replacement types."

Alliance Airlines buys Fokker 70

Alliance Airlines has purchased a Fokker 70 (MSN 11547) from Rijksluchtvaartdienst, an organisation responsible for keeping a register of all aircraft in the Netherlands.

It took delivery of the aircraft at Woensdrecht, Netherlands on 2 August. The Fokker arrived in Brisbane, Australia, on 7 August after a journey via Turkey, the United Arab Emirates, India, Malaysia, Indonesia and Townsville, Australia.

Airfinance Journal's Fleet Tracker indicates the unit is a 1995-built aircraft.

Alliance did not use financing for the acquisition. KBX Proprietary is the ownership entity.

Norton White Lawyers acted on the transaction.

MSN 11547 is Alliance's only purchase from Rijksluchtvaartdienst.

Austrian sells 21 Fokkers

Austrian Airlines sold 21 Fokkers, its entire fleet of the aircraft type, to Alliance Aviation in November 2015.

The aircraft include 15 Fokker 100 aircraft and six Fokker 70s, with a collective average age of 21 years. The aircraft deliver between December 2016 and December 2017.

The purchase price for the Fokker aircraft is $15 million, and will comprise an issue of new shares in Alliance and a cash component, according to a statement from Austrian.

Austrian's Fokker aircraft are being replaced with nearly new Embraer 195 jets, a process that started from January 2016.

Current-generation E-jets have been a popular replacement for European airlines phasing out their Fokker fleets. In April, KLM Cityhopper announced that it would replace its fleet of 19 F70s with 15 new E175s and two new E190s.

Helaba turns to Asia

Michael Allen speaks to Helaba's global head of transport finance about the bank's focus on institutional investors and its push into Asia.

Jörg Schirrmacher has been with German Landesbank Hessen-Thüringen (Helaba) since 1998 and has headed up the bank's aviation finance business since August 2010.

The Frankfurt region-native, who has studied at Frankfurt University and subsequently abroad at the University of Southampton, England, and Duke University in the USA, is also responsible for the bank's overall transportation finance business, but says that aviation has a special attraction for him.

"Most people might move around doing different things for different companies, but most of them don't really leave the industry. I think that's a sign that most people are really quite happy working in aviation, and I'm certainly no exception," he tells *Airfinance Journal*.

Schirrmacher is now busy further internationalising Helaba's aviation business, overseeing the bank's push into the Asia-Pacific region.

Helaba has an aircraft finance loan book of about $3.5 billion, split almost equally among what Schirrmacher calls the "three main regions": Asia-Pacific (APAC), Europe and the Americas.

He says that APAC has "really increased over the last three to four years" and, apart from the Middle East, which is "much smaller", is the world's "growth market".

"In North America and Europe, if airlines want to grow, they often must grow at the expense of someone else," he says,

"In Asia, the market itself is growing at a higher rate. If you just keep your market share, you are growing. In the US-Europe, the growth rate is a little bit lower. You can still grow with the market, but you can take market share from someone else. In APAC, as long as your business model is ok, you grow with the market. It's a more benign market, I would say."

He sees "longer term" growth in the APAC region, saying that most of the "emerging market countries with large populations" are in Asia. While there are constraints on the infrastructure side, Schirrmacher is confident this will develop over time. Helaba is keen to help out with the financing of orders by the Asian airlines.

"The preference in Asia is for new kit compared to maybe North America where airlines are much more tempted to fly older aircraft. We at Helaba have a focus on financing new aircraft," he says.

"You find that most people might move around doing different things for different companies, but most of them don't really leave the industry. I think that's a sign that most people are really quite happy working in aviation, and I'm certainly no exception."

Jörg Schirrmacher, global head of transport finance, Helaba

In line with this outlook, Helaba is using its representative offices in Singapore and Shanghai to probe deeper into the APAC market and locate potential opportunities there.

Chinese lessors

Helaba also looks to increase its aviation business in China, through its representative office in Shanghai led by Wang Yi. "We have capital which we want to deploy but we would like to do that with an experienced existing partner," explains Schirrmacher, adding it is not easy to keep track of all the leasing companies there, with a handful of new ones seemingly cropping up every year.

Despite the clear opportunities available in China, Schirrmacher says that at some point a downturn is inevitable.

"I would say statistics tell you that the downturn is coming closer. Not that I would expect one next year, but just pure experience tells you it's not going to go up all the time."

In addition, Schirrmacher sees the airline market in China as relatively closed and that the focus of Helaba's business in China should be on the lessors.

"If you look at China, I think the lessor market is much more important than the airline market – not that we wouldn't love to do business with the airlines. I have the impression it's still a very closed market. They get their financing mainly from Chinese banks. This is a market where I don't think we have anything to offer, so we are concentrating on the leasing companies who are more interested in US dollar financing."

Indeed, this trend is not exclusive to China. Helaba's business worldwide is gradually moving towards the leasing companies.

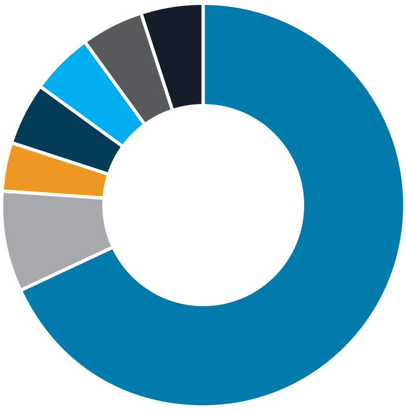
"In the old days, our customer was the airline. Now, on the liquid aircraft, 40% to 50% are held by leasing companies, so it only makes sense that our business goes that way. We quite like working with leasing companies because we feel there are quite a few out there that are very professional, have excellent teams and have a very good ability to repossess, to remarket the aircraft – and that really goes to the core of our philosophy," he says.

Jolco

Helaba has not yet been active in the Japanese operating lease with call option (Jolco) market because it has no presence in Japan and therefore encounters a withholding tax issue.

However, this has now been solved with a new double-tax treaty agreement between Germany and Japan, effective from the beginning of 2017. Still, there are other issues such as being compliant with Germany's *Trennbankengesetz* (split banking act).

Helaba's ownership:



Source: Helaba

"Regulation generally is well-intended, but one has to be realistic about aircraft finance: in the grand scheme of things, it is a relatively small issue. When a regulator who is dealing with the stability of the banking market designs the rules, he probably doesn't have aviation finance at the top of his head," says Schirrmacher.

"The issue we have here is the *Trennbankengesetz*, which is intended to make sure that banks of at least a certain size are safer, and to protect taxpayer money. But they try to prevent them from doing business with parties they deem to be overly risky.

"If they do business with them, they have to do that under strict rules. It doesn't mean they are not allowed to do it, but you have to make sure that certain thresholds are not exceeded."

Schirrmacher says that the "devil is in the detail" of how alternative investment funds are defined, and that all business where a German bank is not dealing directly with the lessor or airline but instead with investors could be affected by the Act.

"I'm absolutely convinced – and that's not only my opinion; that's the opinion of the banking community or the aviation finance community – that those aircraft finance transactions are not intended to be seen as particularly risky.

"When those rules were designed, they probably didn't have those in mind, but now they are there, you have to make sure you comply with them. That's something we are still working on, a process we're still in, in making sure we can enter the Jolco market.

"As always with regulation, it's well intended but it is likely to create an uneven playing field. The Jolco market is going from strength to strength, so we would love to be part of it. There are very good credits, but we can only join the market if rules allow it."

Conservatism

Schirrmacher describes Helaba's risk profile as "relatively conservative compared to other banks".

He says: "There are some banks that are very active when the market is good, and they are not so active or not there when the market is bad. We more try to have an approach where we do a constant amount of business throughout," he says.

"On the credit side, it's about risk and reward, or appropriate risk-reward. I think it's a perfectly fine strategy if you take bigger risk you get bigger rewards, but it's important that the risk is adequately priced, especially when it comes to taking residual value risk. I personally feel a bank is not the best player to handle that risk. An airline, or even better, a leasing company, is much better suited to handle that risk."

Schirrmacher believes that the extra margin banks can get for taking on residual value risk is too low. "Experience has shown you have to write a lot of business to make up for wrong decisions," he says.

With Sparkassen- und Giroverband Hessen-Thüringen and the German federal states of Hessen and Thüringen as its shareholders, Helaba can "afford a bit of a long-term view".

"There are other banks who can do higher advances and lower margins. On the other hand, what we can offer is long-term relationships, long-term security," says Schirrmacher.

"Right now, it's difficult for customers to appreciate that because liquidity is abundant. But those players who are around for a long time know exactly how valuable those relationships are and to have partners you can rely on where you have a low execution risk."

> *"As always with regulation, it's well intended but it is likely to create an uneven playing field. The Jolco market is going from strength to strength, so we would love to be part of it."*
>
> **Jörg Schirrmacher**, global head of transport finance, Helaba

Institutional investors

Over the past two years, Helaba has been inviting institutional investors to take part in transactions.

"We are a lending bank, so we tend to keep our loans on the book till maturity and we will continue to do so and we want to grow our book.

"We thought, 'How can we leverage the expertise and experience we have gathered over the last 24 years?' Together with the fact that more and more new investors express interest in aircraft as an asset class – that creates a bit of a win-win situation," says Schirrmacher.

Helaba keeps a "significant portion" of these deals on its own book, which helps build trust with investors.

"That doesn't mean we can't be wrong, but certainly we have no intention of selling things we are not convinced about because we hold it on our book. That gives us the ability to provide investment opportunity for our clients (a lot of the investors are clients of the bank). It also puts us in a more competitive position towards the airline or leasing company."

Since Helaba is a German bank, many of these institutional investors are German companies, but other western European investors – such as the British – participate too.

In terms of the structure of these investments, the bigger investors can come in "like any other bank" acting as a direct lender, or Helaba can package the deal into a note, which is "often easier to handle internally". Some investors have also set up their own special purpose vehicles for these deals. Others buy into external funds, which are managed by an external asset manager.

Despite increasing its focus on Asia, geographically the bank remains firmly in Germany.

Schirrmacher says: "We are covering clients globally, but we do it from Frankfurt. Obviously, this has advantages and disadvantages. Being close to the headquarters where the decisions are made has some efficiency gains as well. In the end, it's a model that works for us in terms of how we are developing."

Sidecars become a driving force

David Yu, Istat-certified aviation appraiser, looks into the benefits and limitations of setting up a joint venture as an aviation financier.

There has been large growth recently in the number and the sizes of sidecars or joint ventures (JVs) in the aviation investment space. While these structures are not novel and have been in existence for a long time, it has become a structure that is in vogue and has industry insiders and observers taking note.

A sidecar or JV is an agreement to create a separate entity where the parties would co-invest with contributions that include cash, assets, other knowhow or a combination of these. These JV entities generally run in parallel with the existing business scope of one of the partners, hence the sidecar analogy. This is very different to joint ventures with airlines on aircraft operated by the airline partner, which has been around for some time.

Currently, there is a large supply of new capital with little or no aviation experience entering the aircraft leasing industry looking for experienced personnel or partners to do deals. This has created an environment where lease rate factors and returns have steadily been compressed over the past few years.

Given this dynamic, established lessors rightly as risk managers have been happy to raise additional capital through sidecars to pursue more opportunities on a hedged basis. Sidecars enable established lessors to monetise their experience by putting down little equity while retaining benefits such as the sale of the leased aircraft, having more stable cashflows and operating leverage of their staff through servicing arrangements.

Parties involved

In the case of the aircraft leasing industry, sidecars are generally formed with an established lessor and a financial party. While the terms of each agreement differ for each JV, for the most part, the operating lessor would provide a combination of asset management, technical advice and its network of established relationships to source and finance the deals while the financial party would contribute equity, debt or other means to fund the JV and the transactions. The financial party generally provides the majority of the equity capital while the operating party is a minority investor (generally 10% to 40% but more skewed to the smaller side).

The financial party tends to be investors such as investment funds, pension funds, credit companies, hedge funds, private equity and family offices. Other types would include large conglomerates with aviation interests, other financial institutions and trading houses. By and large, these investors are risk adverse and focus predominantly on more modern types and younger aged aircraft.

Usually, the financial party forms one JV while others take a more diversified approach with many sidecars with different established lessors. The latter would include Chow Tai Fook Enterprises and NWS Holdings, which invested along with Investec in Goshawk Aviation and, more recently, both investing with Aviation Capital Group through Bauhinia Aviation Capital. In the first case, Investec sold its entire 20% stake in Goshawk to its two partners.

Sometimes the financial party is also a lessor in its own right such as Tokyo Century Leasing (TCL). It had a JV in aircraft leasing, TC-CIT, formed with CIT (TCL subsequently bought out CIT along with the sale of CIT to Avolon) and another JV focused on engine leasing with GA Telesis. Financial investors sometimes also have minority ownership stakes in the lessor partner such as the case with TCL's 20% equity ownership in GA Telesis and IBJ Leasing's association with Aircastle. IBJ Leasing and Marubeni are both members of the Mizuho keiretsu and through Marubeni own 15.25% stake in Aircastle.

Benefits of sidecars/JVs

In theory, sidecars sound simple and have benefits for both parties. They enable the established lessor to monetise its knowhow and buy and manage assets that it might not have done. It also provides the lessor a platform to become more of a servicer than asset owner, which is more stable.

> *"There is a large supply of capital with little or no aviation experience entering the aircraft leasing industry and looking for experienced personnel or partners to do deals."*
>
> **David Yu**, Istat-certified aviation appraiser

Owners, as the equity holders of assets, inherently have more risk and volatility on their returns because of unforeseeable events that might happen during the course of ownership and the lease. For example, at its most severe, this unforeseeable event can be an airline bankruptcy. During these periods, negative expected cashflow occurs because of additional investment capital needed, the stoppage of lease revenues from the operator, or other scenarios. Instead of these more volatile cashflows, in sidecar structures, established lessors have more certainty because the cashflows are derived from servicing agreements with the financial investor.

These sidecars also enable the established lessor to become more asset-light vehicles. This is one of the main considerations for GECAS, which has formed a sidecar, Einn Volant Aircraft Leasing, with Caisse de dépôt et placement du Québec. The new senior management of GE is more focused on an asset-light model and instead prefers a more stable servicing model.

In addition, established lessors retain certain upside for transactions usually based on some hurdle rates. These hurdles might include a preferred initial return to the financial investor partner and then some subsequent split of profits afterwards. These profit percentages are generally not the same as the equity ownership percentages. The cashflow waterfall sometimes include other variations such as catchups where after the preferred return, the lessor would have all the cashflow until it gets to its determined profit split percentages.

For the financial player, this structure would provide for knowhow from the operating partner that it would not be able to achieve. It can take advantage of the operating partner's geographical presence and more seasoned personnel.

It is arguable whether it is faster in time to form a sidecar versus starting a new lessor company from scratch with a sole party. While most sidecars would take less than a year to establish, a new lessor can be established quicker, when funding is available, within three to six months. While there are many benefits, there are many pitfalls that need to be considered.

Controls and restrictions

There are restrictions on one or both parties which protect the JV from competition with the parent companies. In some instances, the operating party would provide other types of comfort such as guarantees including debt or hurdle rates for the JV entity and partner.

As with any partnership, finding these mechanisms for the alignment of interests is very important. There will be nature conflicts such as the desire for a continued stable management fee versus finding the optimal time to divest an asset, which creates upside for the manager. Sometimes, this is not addressed fully just through the construction of the investment committee or board of directors of the JV. In most cases, the financial investors control the JV entity because they are the majority investor.

Issues and conflict management

In addition, thought needs to be made on how properly to value the contribution of new or older aircraft. Is it at cost or some sort of current market value, especially as the initial batch of aircraft in a JV is generally bought from the established lessor partner's portfolio? Third-party appraisers are often brought in to solve this question.

As with any venture, the mechanisms of the management are important. Will the JV be staffed with full-time seconded management from the lessor or will it have its time split with the continued responsibilities of the parent lessor? Other conflicts that warrant consideration include cherry picking the best assets as well as conflicts over lease initiation, renewal or sales, especially if the established lessor parent has existing aircraft at the same carrier.

Outsourcing is very much part of the aircraft leasing landscape because there are opportunities for every single facet of the business. While most parties tend to retain only the most important services or where they are best suited along with outsourcing, others tend to do all the services in house. The logical follow-up question is whether the operating partner is the most suited in terms of costs, delivery timing, and quality versus outsourced options.

Exits and trends

As with any joint venture, the management of the dynamics between two parties generally lends itself to the eventual exit between the two parties. Over time, partners change strategic directions. Some exits include selling the entire company to one of the partners, an initial public offering, through an asset-backed securities structure, or trade sale to another party, either individual aircraft or wholesale. A prime example would be Waha Capital's sidecar with AerCap in AerVenture. This stake, along with all of Waha's aviation interests and $105 million cash, were sold for a 20% stake in AerCap. There are numerous examples of these sidecar structures with almost every major aircraft leasing player, including AerCap, Air Lease and Avolon.

The continued growth of sidecars is analogous to that of other asset-heavy industries such as hotels, real estate, shipping, among others, which have gone towards a more asset-light servicer model with the distinct separation of the owner and the manager.

David Yu is an adjunct professor of finance, New York University Shanghai.

Sukhoi Superjet 100 – home market is key

With a new generation of Superjet 100s still some time away, the Russian regional jet needs upgrades if it is to compete with its western counterparts.

Launched in 2000, the Sukhoi Superjet 100 (SSJ100) is a product of a joint venture between the Russian aircraft manufacturer Sukhoi and the Italian aerospace company Leonardo. It is a new-technology, fly-by-wire regional aircraft powered by two PowerJet SaM146 engines, jointly designed and produced by Snecma Moteurs and NPO Saturn. The aircraft has the highest-ever proportion of western components in a Russian aircraft.

Seating up to 98 passengers in a five-abreast configuration, the SSJ100 is available in basic (95B) and long-range (95LR) variants, serving short- to medium-range routes between 1,645 and 2,470 nautical miles.

The Sukhoi Civil Aircraft Company is responsible for domestic and CIS sales and for some markets in Asia. The aircraft is marketed in Europe, North America and other mature western markets by SuperJet International.

European Aviation Safety Agency certification was awarded in February 2012, after approval from Russia's Interstate Aviation Committee in 2011. Launch customer Armavia received the first SSJ100-95B aircraft in April 2011, while the LR variant entered service with Gazpromavia in March 2014.

Future developments

According to reports, the Russian manufacturer is planning a new generation of this regional jet, which will have higher capacity and will incorporate a new wing and new engines. Such an aircraft is unlikely to be available before 2025 and it is unclear where the funding for the development will come from.

Istat appraisers' views

Collateral Verifications (CV)

Gueric Dechavanne, vice-president, commercial aviation services

With a limited orderbook and in-service base, the SSJ100 seems to be struggling to maintain the traction it had gained a few years ago. The 70- to 100-seat market remains very competitive, which continues to put pressure on the type. Embraer's introduction of the second-generation (E2) variants of its E-Jet family puts additional pressure on Sukhoi to improve further the current SSJ product. However, as the E2 is still a few years away, this may allow Sukhoi to develop further enhancements to its existing products in order to better compete with the E2. The Mitsubishi MRJ has also been viewed as a competitor, but the recent delays in the aircraft's development make it less of a threat, at least in the short term.

An additional problem for the Superjet is that low fuel prices have made it economic for operators to retain existing aircraft such as Bombardier CRJs and current-generation E-Jets. Overall, CV feels that the SSJ100 originally fared better than expected for a new entrant from a non-established manufacturer, but the initial momentum seems to have dissipated.

With various up-and-coming products, competing in this segment of the commercial aircraft market will not become any easier. To stay on par in the long term with its competitors, Sukhoi will not only have to remain aggressive and competitive with its sales campaigns, but it will also have to upgrade the SSJ100's technology.

ICF International

Angus Mackay, principal

The SSJ100 has entered a crowded 70- to 100-seat regional market segment already occupied by multiple types of varying commercial success, including Bombardier's CRJ series and Embraer's E-Jets. Further competition is on the horizon from Mitsubishi's MRJ and the Comac ARJ21.

In the Russian domestic market, the SSJ100 is intended to replace ageing Tupolev Tu134 and Yakovlev Yak42 fleets, but faces competition from the fledgling Antonov An148 and An158 programmes. Internationally, the SSJ100 can also be considered a replacement candidate for BAe146/Avro RJ aircraft as well as for Fokker 100s. Despite a challenging

AIRCRAFT CHARACTERISTICS

Seating/range

Max seating	108
Typical seating	98
Maximum range (basic version)	1,645 nautical miles (3,048km)
Maximum range (LR version)	2,470 nautical miles (4,578km)

Technical characteristics

MTOW (basic version)	45.8 tonnes
MTOW (LR version)	48.5 tonnes
OEW (basic version)	24.3 tonnes
OEW (LR version)	25.1 tonnes
MZFW (basic version)	36.6 tonnes
MZFW (LR version)	37.4 tonnes
Fuel capacity	13,135 litres
Engines	PowerJet SaM146-1S17/8
Thrust	17,800lbs with automatic power reserve

Fleet data

Entry into service	2011
In service	101
Operators (current and planned)	26
In storage	17
On order	113
Average age	2.6 years

Source: *Airfinance Journal's* Fleet Tracker

market environment, the SSJ100 has had some success, at least in part, thanks to its offering of western engines, avionics and ancillary systems. An important part of marketing the aircraft to western airlines is the global product and logistics support network that Sukhoi has developed in partnership with Leonardo.

Although the current list price is estimated at $35.4 million for the baseline variant and $36.2 million for the long-range version, early sales to launch customer Aeroflot were supposedly made in the $18 million to $19 million range, well below Bombardier and Embraer pricing for their competing types. Competitive operating cost performance and keen pricing relative to its competition have led to some degree of success in western markets. However, the bulk of orders are still expected to come from eastern Europe, Russia and the CIS states, with some support from operators in Asia. Broad acceptance by western lessors appears unlikely at this juncture.

Oriel

Olga Razzhivina, senior Istat appraiser

Oriel has previously noted that whatever the operating characteristics of the SSJ100, its acceptance in the west will always be subject to Russia's position on the world stage. This view is reinforced by Sukhoi reducing its presence in Italy and concentrating its organisation at home. The international tensions in Russia's relations with the western world have caused a more inward-looking attitude in the country, which could have some positive effect on the SSJ in its domestic market. There are a number of factors that may increase the domestic market.

> *Despite offering export credit agency support, Sukhoi's expansion to the western market has been slow.*
>
> **Olga Razzhivina**, senior Istat appraiser, Oriel

First, there is a renewed drive towards self-sufficient manufacturing, which would lead to price reductions for airlines which are willing to accept the replacement non-western equipment and components. Outside Russia and the CIS, however, this is unlikely to be popular.

Second, it has been proposed to offer at least part financing in the Russian rouble for local airlines. This would reduce the proportion of domestic operators' US dollar-denominated costs, a significant consideration in a weak currency environment.

A third factor is a proposed law to mandate the purchase of domestic aircraft before airlines can import foreign equipment. While the workability of this legislation is questionable, given the SSJ's low production rates, it is likely to force Russian airlines to take more domestic aircraft than they have previously intended.

Outside Russia and the CIS, the SSJ's progress is unimpressive. The crowded nature of market segment in which the SSJ competes remains a challenge, even more so, since the Bombardier CSeries has entered service and the Embraer E2 programme is advancing through its testing stages ahead of schedule. The stubbornly lacklustre orderbooks for the new-generation aircraft in this sector remind us that at low fuel prices, increased efficiency becomes less important for airlines.

Despite offering export credit agency support, Sukhoi's expansion to the western market has been slow. Apart from Interjet, only Cityjet in Europe is operating the type, mostly on charter services. No lessor outside Russia has placed orders or acquired aircraft despite the growing competition for the mainline types.

With such a limited fleet outside Russia, the SSJ is likely to trade only at depressed levels, if at all. The domestic market with its prescriptive legislation is unlikely to satisfy the "willing buyer" condition (of Istat criteria). Oriel's values range from $7.5 million for the oldest vintage to circa $18.5 million for the new extended-range example and the lease rates vary between $80,000 and $165,000, depending on aircraft age.

Values SSJ100-95B, SaM146 engines

Current market value ($m)

Build year	2011	2013	2015	2017
CV view	12.8	14.3	16.3	25.4
ICF view	15	17.7	20.7	24.2

Assuming standard Istat criteria. Maintenance status assumes half-life, except for new aircraft, which assumes full-life.

Indicative lease rates ($000s/month)

Build year	2011	2013	2015	2017
CV view	130	150	170	190
ICF view	120-140	135-160	155-190	175-210

Monthly rental will vary according to factors such as term and lessee credit.

Going **large**

At the top end of the single-aisle market, Airbus's A321 has a clear advantage over the rival Boeing 737-900. **Geoff Hearn** looks at the differences between the largest members of the respective single-aisle families.

The Boeing 737-800 versus Airbus A320 was for many years the most important competition between the single-aisle aircraft of Airbus and Boeing, but as airlines have tended towards larger models, the A321 versus 737-900 battle has become increasingly important. The latest versions of the current generation aircraft are the A321-200 and the 737-900ER.

A321-200

The A321 is the largest member of the European manufacturer's single-aisle family. The A320 was the first member of the family, entering service in 1988. The larger A321 followed in 1994, the smaller A319 in 1996, and the smallest member of the family, the A318, in 2003.

The original A321-100 had a reduction in range compared with the A320, leading Airbus to launch the heavier and longer range A321-200 in 1995, with entry into service following a year later.

Airbus announced in 2010 that it would re-engine all members of the A320 family, except the A318, with new-generation powerplants. The new models are identified with the suffix "Neo" (new engine option) and the term "Ceo" (current engine option) has subsequently been adopted for in-service and current-production aircraft. The Neo models provide a fuel burn improvement of about 17% over their previous-generation counterparts, but some of this is derived from sharklets (extended wingtips) that are available as an option on current-generation aircraft, such as the A321-200.

The A321neo was the second variant to enter service when it was delivered to Virgin America in April; however, the Ceo model remains in production. Airbus has not confirmed a definitive end-of-production date for the current engine model.

The Airbus A321

The Boeing 737-900ER

737-900ER

The 737-900ER (Extended Range) model is the latest and largest member of the 737 next-generation (NG) family.

The original member of the NG family was the 737-700, which entered service in 1998. This was closely followed by the stretched -800. Boeing later introduced the 737-900, which was a further stretch. The -900 retained the emergency exit configuration of the -800, which restricted its maximum seating capacity. The 737-900 also had the same maximum take-off weight and fuel capacity as the -800, which limited its range. These shortcomings prevented the 737-900 from effectively competing with the A321.

After the original 737-900 failed to impact the market, Boeing launched the ER variant with a view to improving the model's operational capability and competitiveness. Design changes included increased maximum take-off weight, auxiliary fuel tanks and winglets. The higher-capacity, longer-range derivative was launched on 18 July 2005 with an

Key data

Model	Entry into service	MTOW (tonnes)	Engines	Maximum pax	Typical pax	Range (nm)	In service	On order	Customers
A321-200	1996 (1994 for -100)	89/93.5	CFM56-5B V2500	236	185	3,200	1,498*	398	110
737-900ER	2007 (2001 for -900)	85.1	CFM56-7C	215	180	3,200	409**	102	21

Source: *Airfinance Journal's Fleet Tracker, September 2017*

**Including original -100 models. **Including original -900 models.*

Current market values ($m)

	2007	2009	2011	2013	2015	2017
737-900ER	25.2	29.0	32.4	37.0	43.3	50.0
A321-200	25.3	29.5	33.5	39.3	45.1	51.8

Source: *Airfinance Journal's Fleet Tracker (AVITAS) values, September 2017*

order for 30 aircraft from Indonesia's Lion Air and entered service in 2007.

Boeing has launched new models to replace the NG family. The 737-9 Max is the successor to the 737-900ER, but the aircraft has not matched the A321neo's order success and the recent launch of the 737 Max 10 (see box on *page 40*) is the US manufacturer's attempt to counter Airbus's domination of the large single-aisle market. As for its Airbus competitor, production of the 737-900ER will continue alongside the replacement Max models for an as yet undefined period.

Airbus has sold nearly 1,400 more A321s than Boeing has managed for the 737-900. This discrepancy is to some extent explained by the late entry into service of the ER variant of the Boeing model, but the continuing supremacy of the A321 is borne out by the order backlog, in which the Airbus model has nearly four times as many orders booked as its rival.

Operating cost

Airfinance Journal's comparison of the operating costs of the competing models does not immediately explain the difference in success of the competing aircraft. On paper, the 737-900ER appears competitive in terms of cash and total operating costs. The Airbus aircraft does hold an advantage in terms of seat-mile costs, but this would be anticipated for a larger aircraft of similar technology to its competitor.

Generic cost comparisons are sensitive to assumptions, but a review of other findings from industry bodies suggests *Airfinance Journal*'s results are broadly correct. The reasons for the relative lack of success of the Boeing model would appear to lie elsewhere.

Advantage A321

On paper, the 737-900ER looks relatively competitive, but there is a consensus in the market that its late entry into service compared with the A321 (and the rest of the NG family) has been a major factor in its lagging behind its Airbus competitor in terms of sales.

Oliver Stuart-Menteth, managing director, Fintech Aviation Services, points out that there is about 10 years between the entry into service of the A321-200 and the 737-900ER. At an average of about 90 orders a year, this translates into a significant difference in cumulative sales and the number of operators of the aircraft.

Stuart-Menteth adds: "The aircraft delivered over those years have dispersed in the secondary market and therefore the A321 market is much more liquid than that of the 737-900ER." The existing customer base for the A321 has provided Airbus with a major advantage as airlines have sought to switch to larger single-aisle aircraft to meet growth in passenger demand.

Boeing places hopes on Max 10

Boeing's successful launch of the 737 Max 10 has grabbed the headlines, but whether it will allow the US manufacturer to regain market share is not certain.

Airbus is seeking to retain its advantage in the large single-aisle market, and the A321neo has significantly outsold the 737 Max 9 – the direct replacement of the 737-900ER. To date, the Airbus aircraft has accumulated more than 1,100 orders and this may understate its success because there are likely to be airlines that convert existing A320 orders to purchases of the larger model. In contrast, the 737 Max 9 has less than 250 orders specifically attributed to it in the Boeing orderbook.

Boeing's response has been to launch the Max 10 variant of the 737, which has had some initial success. Boeing's latest offering was launched at the Paris air show and secured more than 360 orders from, importantly, 16 different customers during the show.

Where the success of the Max 10 leaves the Max 9 is another question. A number of industry commentators are expressing doubts that there is room for all of the current variants of the Max family.

Development of the 737 Max 10 is a relatively low risk/low cost undertaking for the US manufacturer, not least because the aircraft will have limited increases to its design weights – meaning that range will be reduced by 300 nautical miles compared with the Max 9. The manufacturer argues that very few potential operators require a range of more than 3,000 nautical miles.


737 Max 10


A321LR

This adds another twist to the vexed question of whether the Boeing 757 replacement market is sufficiently large to warrant a new model from either of the main manufacturers. The Max 10 takes Boeing away from this market, which may be an Achilles heel, particularly as Airbus's latest offering – a longer-range (LR) version of the A321neo – is close to being a genuine 757 replacement in terms of operational capability.

According to the manufacturer, the A321LR, deliveries of which will begin in 2019, will be able to fly sectors of up to 4,000 nautical miles, making it suitable for transatlantic routes. The recent order by Norwegian for 30 A321LRs suggests there is a market for such an aircraft, although the order involves a switch from an earlier commitment for standard A320neo rather than additional aircraft.

One major advantage of the 737-900ER over the A321 is that it is significantly lighter, which should translate into lower operating costs. However, there are also some technical issues that work against the Boeing aircraft. Although the 737-900ER is close to the A321 in terms of capacity and range in most operational conditions, the largest 737 model suffers from performance limitations at some hot and/or high airports. This can be a significant operational drawback for some airlines.

Values and lease rates

There was a view among appraisers that the size of the 737-900ER fleet and its relatively small customer base put it in a niche aircraft category, which deterred investors. However, an increasing base of quality customers (including Lion Air, United Airlines, Delta Airlines, Alaska Air Lines and Turkish Airlines) has reversed the early trend of financiers shunning the aircraft because of its concentrated fleet distribution.

Market values of A321-200s are higher than those of 737-900ERs for equivalent years. The large orderbook, low numbers of stored aircraft and a broad customer base are all factors that support the Airbus model's market values. Newer A320 models are valued at about $2 million more than their Boeing counterparts. Although substantial, the difference is well below the near $7 million differential in list prices.

Values for both aircraft types are likely to suffer increasingly from the last-off-the-line effect, although neither Boeing nor Airbus have made definitive statements as to when production of the various current-generation types will end.

Indicative relative cash operating costs

	A321-200	737-900ER
Relative trip cost	Base	-7%
Relative seat cost	Base	+2%

Indicative relative total direct operating costs

	A321-200	737-900ER
Relative trip cost	Base	-9%
Relative seat cost	Base	+1%

Assumptions: 500-nautical mile sector. Figures are based on Airfinance Journal's interpretation of manufacturer claims and published data. Fuel consumption, speed, maintenance costs and typical seating layouts are as per Air Investor 2017.

Operator opportunities

There is little doubt that the A321 is a success story and Airbus continues to reap rewards from the model. Boeing has long maintained that the 737-800 was at the sweet spot of the market and there is a feeling among some in the industry that it has been reluctant to invest in larger 737 variants.

While the 737-900ER has provided some competition to the A321, it has not brought the returns for which Boeing would have hoped. However, for operators that do not need the extra capacity of the A321, the Boeing aircraft is an attractive option, particularly if the lower market values quoted by appraisers are reflected in acquisition costs.

Rating Agency Unsecured Ratings

Airlines

Airline	Fitch	Moody's	S&P
Aeroflot	B+(stable)	-	-
Air Canada	BB-(stable)	Ba3(stable)	BB-(stable)
Air New Zealand	-	Baa2(stable)	-
Alaska Air Group	BBB-(stable)	-	BB+(stable)
Allegiant Travel Company	-	Ba3(stable)	BB-(stable)
American Airlines Group	BB-(stable)	Ba3(stable)	BB-(stable)
Avianca Holdings - IFRS	B(neg)	-	B(stable)
British Airways	BBB-(stable)	Baa3(stable)	BB+(stable)
Delta Air Lines	BBB-(stable)	Baa3(stable)	BBB-(stable)
easyJet	-	Baa1(stable)	BBB+(stable)
Etihad Airways	A(stable)	-	-
GOL	CCC	Caa3(neg)	CCC+(pos)
Hawaiian Airlines	B+(pos)	B1(stable)	BB-(stable)
jetBlue	BB-(pos)	Ba1(stable)	BB-(stable)
LATAM Airlines Group	B+(stable)	B1(stable)	BB-(stable)
Lufthansa Group	-	Baa3(stable)	BBB-(stable)
Qantas Airways	-	Baa2(stable)	BBB-(stable)
Ryanair	BBB+(stable)	-	BBB+(stable)
SAS	-	B2(stable)	B(stable)
Southwest Airlines	BBB+(stable)	A3(stable)	BBB+(stable)
Spirit Airlines	BB+(stable)	-	BB-(stable)
Turkish Airlines	-	Ba3(neg)	BB-(neg)
United Continental Holdings	BB(stable)	Ba2(stable)	BB-(pos)
US Airways Group	-	B1	-
Virgin Australia	-	B2(neg)	B+(stable)
WestJet	-	Baa2(neg)	BBB-(stable)

Source: Ratings Agencies - 18th September 2017

Lessors

	Fitch	Moody's	S&P
AerCap	BBB-(stable)	-	BBB-(stable)
Air Lease Corp	BBB(stable)	-	BBB(stable)
Aircastle	-	Ba1(stable)	BB+(pos)
Avation PLC	B+(stable)	-	B+(stable)
Aviation Capital Group	BBB(stable)	-	A-(stable)
Avolon Holdings	BB(stable)	Ba2(stable)	BB+(stable)
AWAS Aviation Capital	-	Ba3(stable)	BB(pos)
BOC Aviation	A-(stable)	-	A-(stable)
DAE Aerospace Enterprise	-	Ba3(stable)	BB(pos)
FLY Leasing	-	Ba3(stable)	BB-(stable)
ILFC (Part of AerCap)	-	Baa3(stable)	-
Park Aerospace Holdings	BB(stable)	Ba3(stable)	-
SMBC Aviation Capital	A-(stable)	-	BBB+(stable)

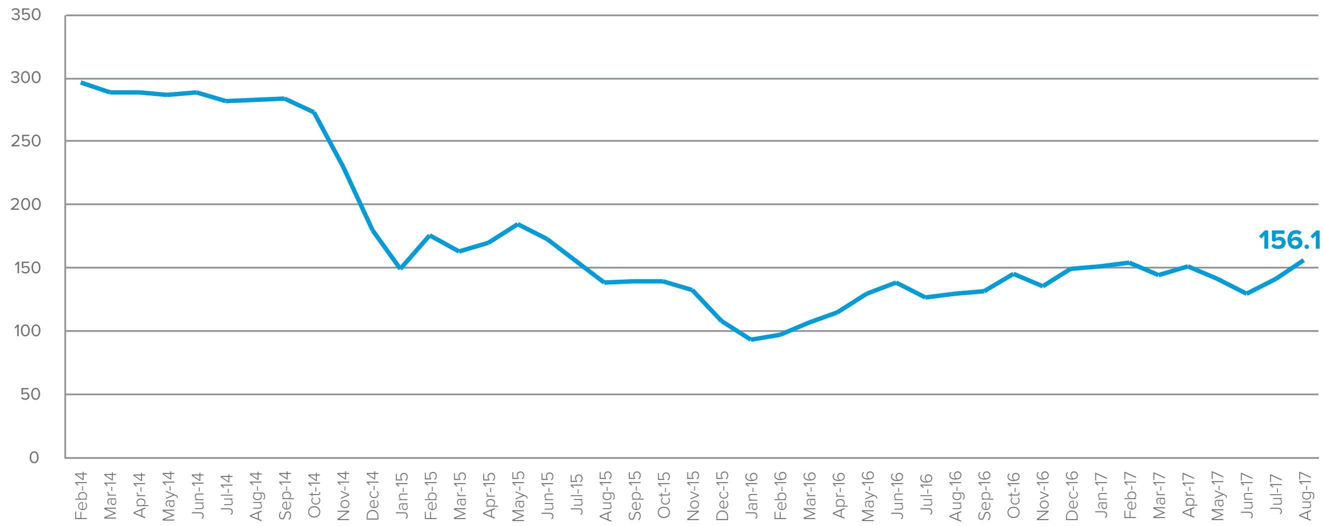
Source: Ratings Agencies - 18th September 2017

Manufacturers

	Fitch	Moody's	S&P
Airbus Group	A-(stable)	A2(stable)	A+(stable)
Boeing	A(stable)	A2(stable)	A(stable)
Bombardier	B(neg)	B2(stable)	B-(stable)
Embraer	BBB-(stable)	Ba1(neg)	BBB(neg)
Rolls-Royce	A-(stable)	A3(neg)	BBB+(stable)
United Technologies	A-(neg)	A3(stable)	A-(neg)

Source: Ratings Agencies - 18th September 2017

US Gulf Coast kerosene-type jet fuel (cents per US gallon)



Source: US Energy Infromation Administration

Recent commercial aircraft orders (28 June - 15 Sept)

Customer	Country	Quantity/Type
Iberia	Spain	20xA320neo
IAG	UK	2xA330-200
BOC Aviation	Singapore	4x787-9
ALC	US	2x787-9, 7x737 Max 8, 5x737 Max 7
ICBC	China	18xA320neo
Manderin Airlines	Taiwan	6xATR72-600
Skywest	US	25xE175
Cathay Pacific	Hong Kong	32xA321neos

*Publically announced orders

Source: Airbus

Aircraft list prices - new models

Model	$ millions
Airbus (2017 prices)	
A319neo	99.5
A320neo	108.4
A321neo	127
A330-800neo	254.8
A330-900neo	290.6
A350-800	275.1
A350-1000	359.3
Boeing (2017)	
737 Max 7	92.2
737 Max 8	112.4
737 Max 9	119.2
777-8X	379.2
777-9X	408.8
787-10	312.8
Bombardier (2016)	
CS100	76.5
CS300	85.7
Embraer (2017)	
E175-E2	51.6
E190-E2	59.1
E195-E2	66.6

Current production aircraft prices and values ($m)

Model	List price	Current market value*
Airbus (2017 price)		
A319	90.5	35.6
A320	99.0	43.7
A321	116.0	51.6
A330-200	233.8	90.4
A330-300	259.0	102.1
A350-900	311.2	143.5
A380	436.9	220.3
ATR (2016)		
ATR42-600	22.4	16.1
ATR72-600	26.8	20.4
Boeing (2017)		
737-700	82.4	36.1
737-800	98.1	46.8
737-900ER	104.1	49.0
747-8 (passenger)	386.8	162.6
777-200LR	320.7	N/A
777-300ER	347.1	156.9
787-8	229.5	117.3
787-9	270.4	137.1
Bombardier (2016)		
CRJ700	41.4	23.6
CRJ900	46.5	26.0
CRJ1000	49.5	27.9
CS100	76.5	32.4
CS300	85.7	37.2
Q400	31.9	21.4
Embraer (2017)		
E170	42.4	25.8
E175	45.7	28.5
E190	50.6	32.5
E195	53.5	34.5

*Based on Istat appraiser inputs for Air Investor 2017

Lease rates ($m)

Model	Low	High	Average
Airbus			
A319	230	310	270
A320	285	370	328
A320neo	300	400	350
A321	340	420	380
A330-200	400	830	615
A330-300	500	900	700
A350-900	900	1,200	1,050
A380	1,500	2,000	1,750
ATR			
ATR42-600	110	155	133
ATR72-600	150	200	175
Boeing			
737-700	240	310	275
737-800	295	400	348
737-900ER	320	400	360
747-8 (passenger)	1,050	1,440	1,245
777-300ER	1,100	1,450	1,275
787-8	850	1,050	950
787-9	950	1,150	1,050
Bombardier			
CRJ700	150	228	189
CRJ900	180	233	207
CRJ1000	190	255	223
CS100	215	300	258
CS300	255	330	293
Q400	161	200	181
Embraer			
E170	170	230	200
E175	190	245	218
E190	230	285	258
E195	240	290	265

Commercial aircraft orders by manufacturer

	Gross orders 2017	Cancellations 2017	Net orders 2017	Net orders 2016
Airbus (31 August)	264	49	215	731
Boeing (12 September)	500	67	433	668
Bombardier (30 June)	23	0	23	237
Embraer (16 August)	49	2	47	55
ATR (12 September)	95	0	95	45

Based on *Airfinance Journal* research and manufacturer announcements until 31 July, unless stated
** includes a provisional order from IndiGo for 50 ATR72-600s*

A provocative view of **globalisation's future**

Airlines and original equipment manufacturers are showing signs of wanting to restrict competition, writes **Adam Pilarski**, senior vice-president at Avitas.

The past few decades are the age of globalisation. The world is getting smaller and much more interconnected. Trade has been growing in line with regional specialisation. These developments have been welcomed worldwide by economists, who always believe globalisation and the resulting trade will lead to a better allocation of scarce resources, the holy grail of our science. All those movements of people and goods have been a boon to aviation.

The fact that globalisation is not necessarily good for everybody has been also recognised for a long time. The Luddites were smashing machines two-and-a-half centuries ago protesting against progress, which they saw reducing their welfare. Recently, anti-globalisation movements have been gaining strength, asserting their influence via the political mechanism. Ironically, the two countries which introduced the free-trade ideology to the world and benefited for a long time from globalisation (the UK and US) have turned recently against these principles at the ballot boxes.

The negatives of worldwide globalisation have been widely discussed. While few people argue for downright isolationism, the trade-offs between the overall improved welfare of the world as a whole versus the local costs experienced in some places have been more in focus in the past few years.

These, though, are not the developments I want to discuss here. The lot of the horse and buggy driver who gets replaced by an automobile has been discussed enough. I want to focus on another aspect of the big globalisation issue: concentration of economic power.

Competition leads to higher efficiency, globalisation and specialisation. It also can lead to lower profit margins being competed away by others. The most efficient prevail and will want to keep this status quo forever. This can lead to an abandonment of free markets and a movement away from competition towards more monopolistic market structures. More market power is the goal of most firms competing in the market place but, paradoxically, the more successful they are exploiting free competition, the more likely they may be moving into a dominant position and away from the concepts of competition. So, opposition to globalisation comes from two extremes: the poorest parts of the society losing their jobs and status, and the richest elements who, after gaining their position, want to maintain the status quo and forego competition.

Our author at the 19th Global Annual Airfinance Conference in Dublin.

> *The Luddites were smashing machines two-and-a-half centuries ago.*
>
> **Adam Pilarski**, senior vice-president, Avitas

The above-mentioned trends are quite prominent in aviation both among airlines and manufacturing. Starting with airlines. In the USA, we have very pronounced movements towards consolidation and concentration of economic power. Airlines claim they cannot make money with too much competition and managed to reduce options to the flying public. There have not been too many significant new entrants in the US domestic market for some time and all mergers have been approved by government bodies.

There have also been restrictions on foreign entities attempting to enter the US market. We have a lower legal maximum ownership by foreign capital in US airlines than many countries and when outsiders attempted to set up subsidiaries in the US they faced tremendous hurdles. The same for international flying where the attacks on the Gulf carriers and Norwegian cannot be seen as anything but a blatant attempt by those with market power to restrict competition.

Moving to the aircraft manufacturing side, we can also detect interesting developments away from globalisation and specialisation towards brute market power. Trying to reduce costs resulted in moving the production of parts of the final product around the world. That led to lower costs but also reduced the control the prime manufacturer had over the production process and greatly increased risks. The disaster of the 787 production, as one example, led to substantial delays and penalties, causing a rethink of this strategy.

And other original equipment manufacturers, both on the airframe and engine sides, faced similar environments across the world. Maybe outsourcing is not the way to go? Greater control may be better. However, moving that way will not help control costs as originally fantasised. The conflict between outsourcing based on the benefits of free competition for the sake of efficiency and insourcing in the interest of control in line with less competition and more monopoly power is now coming to the forefront of thinking by manufacturers.

The recent developments in manufacturing seem to be moving towards less outsourcing with its loss of control of one's own destiny and toward attempting to reinforce a monopoly position. This is what Boeing is attempting to do by relying more on its unique position and hoping this will lead to greater profits by concentrating on all elements of manufacturing, not just on final assembly. The new goal of attempting to shift future profits from final assembly to the imprecisely defined "services" is an attempt to increase profits by utilising market power. The acquisition of B/E Aerospace by Rockwell Collins and, even more so, the potential merger of this entity with UTC follows the same plot line. All this will lead to interesting developments and potential conflicts between the ever more powerful manufacturers.

AIRFINANCE JOURNAL

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Leasing top 50 2017

Trend analysis – An aggregate view of the global leasing industry

Figure 1 - Financial highlights

$ billion	2012/13	2013/14	2014/15	2015/16	2016/17
Revenue in survey	12.5	13.9	13.2	16.0	16.7
GECAS	5.3	5.3	5.2	5.3	N/A
Total revenue	17.8	19.3	18.5	21.4	N/A
PP&E in survey	102.0	112.3	112.2	116.5	125.4
GECAS	36.2	34.9	30.6	34.3	N/A
Total assets	138.2	147.3	142.8	150.8	???
Net income in survey	1.7	1.4	2.7	3.1	3.3
GECAS	1.2	0.9	1.0	1.3	1.4
Total net income	3.0	2.2	3.8	4.4	4.7

This year, in addition to presenting our "Lessor comps" in the next section which compares the most recent financial period's performance for individual lessors, we decided that there would be interest in an analysis of the global trends for the industry. This is facilitated by the increased availability of public financial data for the world's lessors. The survey group includes 20 lessors, including seven of the ten largest (the exceptions being GECAS, BBAM (though it includes FLY) and DAE Capital (though it includes AWAS).

Among the questions that can be addressed are: what has been the industry's growth rate; what is the trend in yields and what are the trends in financing costs, capital structure and profitability of the industry.

Growth

Firstly, growth rate. Figure 1 shows the key financials for the approximately 20 lessors whose financials have been continuously available (we have made some estimates to fill a couple of gaps) over the last five years (or were start-ups during the period).

Total property, plant and equipment assets for the population in their most recent financial years were $125.4 billion, revenues were $16.7 billion and net income was $3.3 billion. We have added the values for GECAS which are available from GE annual reports and investor presentations to get a more comprehensive view of the segment's size.

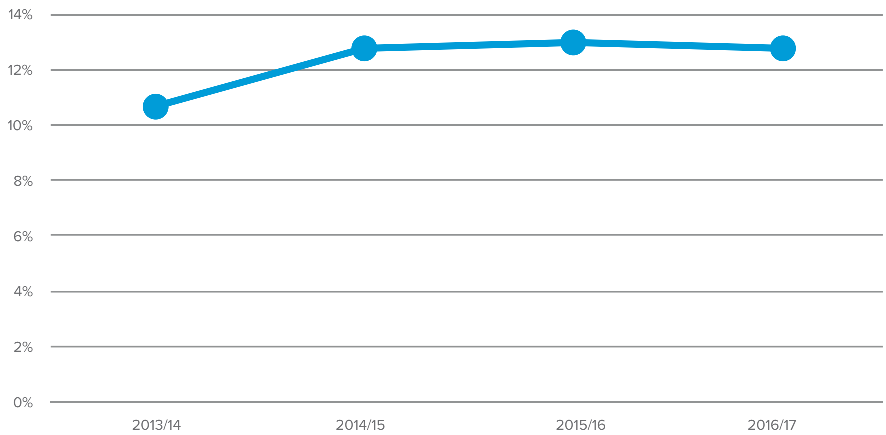
As we can see, despite the large volume of purchase and leasebacks and OEM orders, the growth in property, plant and equipment assets among our survey group over the last five years has been a relatively modest 23%. Of course this is affected by the relatively high rate of asset sales among some of the larger lessors who are included in the survey. These sales have been to other leasing companies, into structured ABS deals or side-cars. And it may be because a lot of growth is through entities whose financials are undisclosed, particularly the Chinese lessors.

Yield

Figure 2 shows the yield trend over the last five years. We had anticipated that with the many new investors competing for sale and leasebacks, competition to place their speculative OEM orders and rumours of lease rates in the 50-60 bps per month

Continued on page 50 >>>

Figure 2: Lease yield



Source: Company reports and *The Airline Analyst*

Top 50 **lessors by number of aircraft**

Rank	Lessor	Total	Turboprop	Regional jet	Narrowbody	Widebody
1	GECAS	**1,271**	19	260	822	170
2	AERCAP	**1,121**	-	-	839	282
3	AVOLON	**572**	-	52	433	87
4	SMBC AVIATION CAPITAL	**437**	-	4	395	38
5=	NORDIC AVIATION CAPITAL	**404**	247	149	8	-
5=	BBAM	**404**	-	2	299	103
7	DAE CAPITAL	**334**	52	-	219	63
8	BOC AVIATION	**299**	-	5	248	46
9	AIR LEASE CORPORATION	**278**	-	2	217	59
10	AVIATION CAPITAL GROUP	**274**	-	-	267	7
11	ICBC LEASING	**250**	-	5	215	30
12	AIRCASTLE	**214**	-	8	165	41
13	ORIX AVIATION	**209**	-	-	185	24
14	MACQUARIE AIRFINANCE	**202**	-	3	188	11
15	CDB LEASING	**179**	-	20	130	29
16	AVMAX	**156**	87	63	5	1
17	APOLLO AVIATION GROUP	**148**	-	-	123	25
18=	CASTLELAKE	**146**	17	8	94	27
18=	JACKSON SQUARE AVIATION	**146**	-	-	128	18
20	STANDARD CHARTERED BANK	**133**	-	-	113	20
21	BOCOM LEASING	**115**	-	5	91	19
22	DEUCALION AVIATION FUNDS	**110**	-	-	90	20
23	CHINA AIRCRAFT LEASING COMPANY	**93**	-	-	89	4
24	CARGO AIRCRAFT MANAGEMENT	**88**	-	-	10	78
25	GOSHAWK	**85**	-	1	80	4
26=	VEB LEASING	**82**	3	29	23	27
26=	TOKYO CENTURY LEASING	**82**	-	3	63	16
28	ELIX AVIATION CAPITAL	**79**	78	-	1	-
29	SKYWORKS LEASING	**75**	4	16	34	21
30	FALKO	**74**	3	55	16	-
31	CCB LEASING	**72**	-	2	59	11
32	TRANSPORTATION PARTNERS	**71**	52	-	19	-
33	ALAFCO	**65**	-	-	59	6
34=	FUYO GENERAL LEASE	**60**	-	8	44	8
34=	GOAL	**60**	17	10	30	3
36=	MINSHENG FINANCIAL LEASING	**59**	-	14	43	2
36=	MERX AVIATION	**59**	-	2	55	2
38	SKY LEASING	**57**	-	-	45	12
39	INVESTEC	**56**	13	6	15	22
39	SBERBANK LEASING	**56**	-	20	30	6
41	ACCIPITER	**53**	-	-	51	2
42=	JETRAN LLC	**52**	4	3	41	4
42=	STATE TRANSPORT LEASING COMPANY	**52**	-	6	38	8
42=	MC AVIATION PARTNERS	**52**	-	-	46	6
42=	ALTAVAIR AIRFINANCE	**52**	-	-	24	28
46	ASL AVIATION GROUP	**49**	20	-	22	7
47	FPG AMENTUM	**44**	-	-	33	11
48	WNG CAPITAL	**42**	-	-	39	3
49=	FORTRESS T&I INVESTORS	**40**	-	-	28	12
49=	DORIC	**40**	6	-	6	28
	Total	**9,151**	**622**	**761**	**6,317**	**1,451**

Source: Airfinance Journal's Fleet Tracker as of 31 August 2017
Includes owned and managed aircraft

Top 50 **lessors by value of fleet** ($m)

Rank	Lessor	Total	Turboprop	Regional jet	Narrowbody	Widebody
1	AERCAP	**$35,110**	-	-	$18,795	$16,315
2	GECAS	**$28,327**	$249	$1,793	$16,755	$9,531
3	AVOLON	**$21,254**	-	$1,040	$13,537	$6,677
4	BBAM	**$19,711**	-	$35	$8,737	$10,939
5	SMBC AVIATION CAPITAL	**$17,393**	-	$72	$12,995	$4,326
6	BOC AVIATION	**$13,862**	-	$131	$9,368	$4,362
7	AIR LEASE CORPORATION	**$13,772**	-	$44	$7,711	$6,018
8	ICBC LEASING	**$11,779**	-	$135	$8,422	$3,222
9	DAE CAPITAL	**$11,655**	$864	-	$6,524	$4,267
10	AVIATION CAPITAL GROUP	**$8,465**	-	-	$8,195	$270
11	CDB LEASING	**$6,987**	-	$457	$4,667	$1,863
12	JACKSON SQUARE AVIATION	**$6,793**	-	-	$4,953	$1,840
13	ORIX AVIATION	**$6,648**	-	-	$5,158	$1,490
14	AIRCASTLE	**$6,627**	-	$198	$3,774	$2,654
15	NORDIC AVIATION CAPITAL	**$6,135**	$3,025	$2,860	$250	-
16	MACQUARIE AIRFINANCE	**$5,824**	-	$51	$5,024	$748
17	BOCOM LEASING	**$5,743**	-	$171	$3,511	$2,060
18	STANDARD CHARTERED BANK	**$5,577**	-	-	$4,175	$1,402
19	CCB LEASING	**$3,774**	-	$48	$2,443	$1,283
20	CHINA AIRCRAFT LEASING COMPANY	**$3,614**	-	-	$3,335	$278
21	TOKYO CENTURY LEASING	**$3,590**	-	$51	$2,301	$1,238
22	GOSHAWK	**$3,520**	-	$23	$3,050	$446
23	INVESTEC	**$3,049**	$140	$146	$427	$2,336
24	DORIC	**$2,794**	$61	-	$144	$2,589
25	ALAFCO	**$2,785**	-	-	$1,905	$880
26	INTREPID AVIATION	**$2,759**	-	-	$39	$2,720
27	ALTAVAIR AIRFINANCE	**$2,731**	-	-	$595	$2,136
28	APOLLO AVIATION GROUP	**$2,702**	-	-	$1,996	$706
29	VEB LEASING	**$2,698**	$34	$548	$623	$1,492
30	DEUCALION AVIATION FUNDS	**$2,666**	-	-	$1,604	$1,062
31	AMEDEO AIR FOUR PLUS	**$2,635**	-	-	-	$2,635
32	IAFC	**$2,381**	-	-	$350	$2,031
33	FUYO GENERAL LEASE	**$2,249**	-	$210	$1,417	$621
34	ACCIPITER	**$1,879**	-	-	$1,717	$161
35	CASTLELAKE	**$1,871**	$57	$45	$1,350	$418
36	FPG AMENTUM	**$1,829**	-	-	$1,039	$789
37	SKY LEASING	**$1,794**	-	-	$985	$809
38	NOVUS AVIATION	**$1,713**	-	-	$99	$1,614
39	MC AVIATION PARTNERS	**$1,676**	-	-	$1,492	$184
40	MINSHENG FINANCIAL LEASING	**$1,645**	-	-	$1,437	$207
41	MERX AVIATION	**$1,608**	-	$58	$1,386	$163
42	AVIA CAPITAL LEASING	**$1,576**	-	-	$1,502	$74
43	TRANSPORTATION PARTNERS	**$1,551**	$805	-	$746	-
44	CMB FINANCIAL LEASING	**$1,479**	-	-	$1,219	$259
45	GOAL	**$1,448**	$227	$195	$900	$126
46	VIETNAM AIRCRAFT LEASING	**$1,205**	$50	-	$369	$787
47	EMP STRUCTURED ASSETS GmbH	**$1,194**	-	-	-	$1,194
48	STELLWAGEN GROUP	**$1,130**	-	-	$282	$848
49	SBERBANK LEASING	**$1,129**	-	$386	$449	$294
50	DRAGON AVIATION LEASING	**$1,094**	-	-	$1,009	$85
	Total	**$301,425**	**$5,512**	**$8,699**	**$178,767**	**$108,448**

Source: Airfinance Journal's Fleet Tracker as of 31 August 2017/Avitas Current Market Values as of March 2017
Includes owned and managed aircraft

range for some aircraft types, there would be a noticeable decline in yield. As can be seen, although there is a flattening, there is no meaningful decline, so far.

The possible explanations are numerous: it could be that these deals are being done only at the margin and have not started to move the aggregate needle (yet). Or it could be (again) that they are being executed by lessors not within the scope of the survey. Or it could be that they have mostly been executed in calendar 2017 and the financials have not caught up with them. Next year's study will be interesting.

Gearing
Gearing for the lessors in the survey has ranged between 2.5x and 3x over the last five years as shown in Figure 3 and is currently trending down. This represents a fairly conservative capital structure supported by a significant increase in retained earnings. The typical 4x or higher of the last cycle is only evident in a few cases currently though obviously this aggregate value is comprised of some very low and some quite high levels of leverage as presented in the 'Lessor comps".

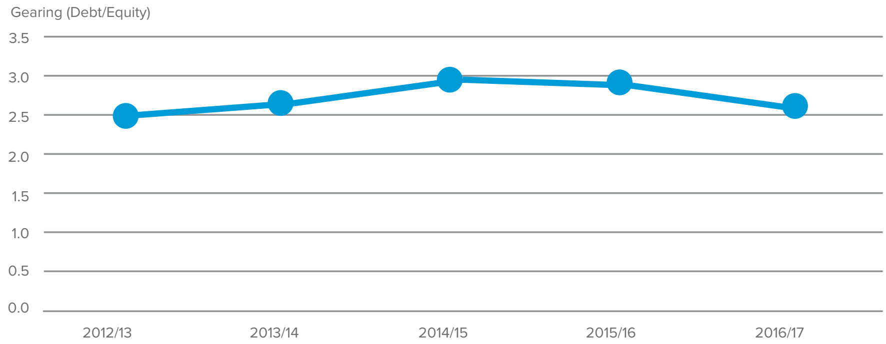
Debt Structure
There has been a major shift in favour of unsecured debt funding as shown in Figure 4. Secured debt has only increased marginally, while unsecured debt has doubled over the period. And, taking advantage of the historic low interest rates we can see that average debt cost has ranged from 4-4.5% as shown in Figure 5. However, as shown in the next section, some lessors have achieved rates as low as 2.5-3%.

Interest Cost
Clearly one of the objectives of the lessors is to maximise the yield-interest cost spread. The slight downward movement in average interest cost matched the slight reduction in yield presented above and was good for profitability in 2016/17. Going forward, with interest rates expected to increase, it will be critical for the lessors to try to negotiate improved yields in order to maintain their margins and profitability.

Return on Equity
As a whole, the group has achieved a return on equity of between 9.5% and 10% over the last three years, after a recovery from the impairment-hit 2013/2014 year. Coming in a zero LIBOR environment, these are attractive returns indeed, despite the minor downward trend evident in Figure 6. We will continue to see new entrants attracted to the industry by these returns but we can expect a squeeze on margins (exacerbated by likely increases in interest rates) and profitability in the near future.

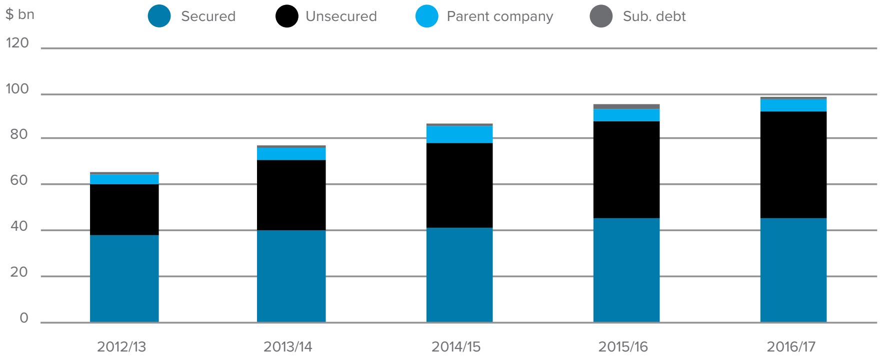
Companies included in the latest period are listed in Figure 1 in the next section. In addition we included CIT and ILFC as appropriate in historic years in order to make the data as consistent as possible

Figure 3: Gearing



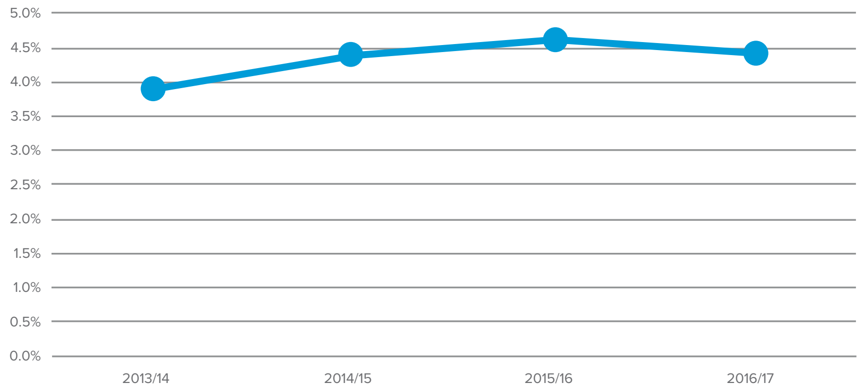
Source: Company reports and *The Airline Analyst*

Figure 4: Debt structure



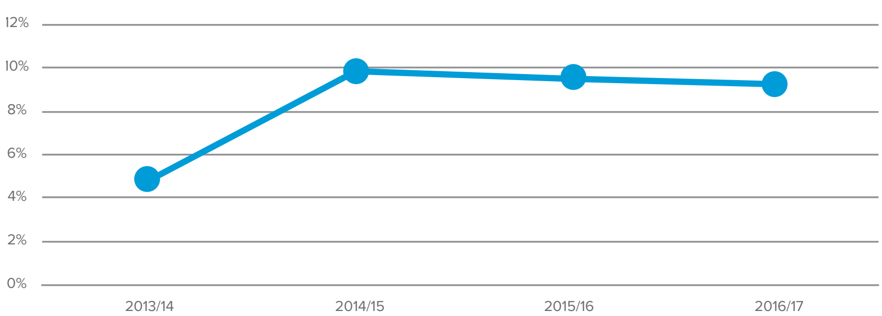
Source: Company reports and *The Airline Analyst*

Figure 5: Average interest cost



Source: Company reports and *The Airline Analyst*

Figure 6: Return on equity



Source: Company reports and *The Airline Analyst*

Lessor comparisons – 2016/17

This study offers a comparison of the financial performance and capital structures of the aircraft leasing companies based on their most recent available financial statements (ending either in 2016 or 2017).

To make this report as comprehensive as possible, we have reached beyond the publicly listed lessors to the public filings of lessors in Ireland, Denmark and Kuwait.

Figure 1 identifies the entities included in the study. In total we have been able to source the financials for 20 leasing companies. Financials are not available for GECAS, but some headline numbers (though fewer than historically) are available in the GE Annual Report. In addition to the obvious major players, we include AviaAM from Lithuania (listed in Poland) and Avation Plc from Singapore (listed in the UK). Most of the lessors in the study are incorporated in the USA or Ireland though two of the largest, AerCap and BOC Aviation, are incorporated in the Netherlands and Singapore, respectively. The abbreviations used to refer to the lessors through the rest of this study are also indicated in Figure 1.

In aggregate, the lessors included in the study represent a total current fleet of 5,679 aircraft or 49% of the 11,593 aircraft analysed in the "Global leased fleet" section of this supplement. The significant absences from our coverage include Macquarie who do not file financial information publicly other than a few headline numbers, DAE Capital (though we do include the 2016 numbers for AWAS) and BBAM (though we do include FLY). Some lessors that we have included previously are not included as they had not filed their 2016 financial statements at the date of preparing this compilation. These are AerDragon, Lease Corporation International, Pembroke Capital and Triangle (Falko). We have included for the first time Avolon, Vermillion and Accipter.

Figure 1: Lessors included in the study

Lessor	Country	FYE	Abbreviation
Accipiter Holdings	Ireland	31-Dec-16	Accipiter
AerCap Holdings NV	Netherlands	31-Dec-16	AerCap
Air Lease Corporation	USA	31-Dec-16	ALC
Aircastle	USA	31-Dec-16	Aircastle
ALAFCO	Kuwait	30-Sep-16	ALAFCO
Amedeo Air Four Plus	UK	31-Mar-17	AA4+
Avation PLC	UK	30-Jun-17	Avation
AviaAM Leasing AB	Lithuania	31-Dec-16	AviaAM
Aviation Capital Group Corp.	USA	31-Dec-16	ACG
Avolon Holdings Inc.	Ireland	31-Dec-16	Avolon
AWAS Aviation Capital	Ireland	30-Nov-16	AWAS
BOC Aviation	Singapore	31-Dec-16	BOC Aviation
CDB Aviation Lease Finance	Ireland	31-Dec-16	CDBL
China Aircraft Leasing Group Holdings	China	31-Dec-16	CALC
Elix Aviation Capital	Ireland	31-Dec-16	Elix
FLY Leasing	Ireland	31-Dec-16	FLY
GECAS[1]	USA	31-Dec-16	GECAS
MCAP Europe	Ireland	31-Mar-16	MCAP
Nordic Aviation Capital	Denmark	30-Jun-16	NAC
SMBC Aviation Capital	Ireland	31-Mar-17	SMBC AC
Vermillion Aviation Holdings Ireland	Ireland	31-Dec-16	Vermillion

1 Assets and net income only

Note that for some lessors, the entities analysed do not represent the entirety of their global leasing business and may be impacted by internal funding arrangements and inter-company transactions. This applies particularly to Accipiter, MCAP and SMBC AC who have been heavily funded by shareholder loans so please interpret their numbers accordingly. Over the last two years, however, SMBC AC has partially funded itself from external sources.

Adjustments

In order to enhance comparability in treatment and presentation of the financial statements we have made some adjustments as described in Figure 2.

Figure 2: Adjustments to enhance comparability

Item	Treatment
Gain on sale of aircraft	Net gain included in revenue
Recognition of "excess" maintenance reserves	Included in lease revenue but not seperately disclosed by every lessor
Maintenance and transition costs	Recognised under its own heading when disclosed, but not disclosed by every lessor
Staff cost, including stock-based compensation	Included in SG&A expenses
Interest income	Included in other revenue

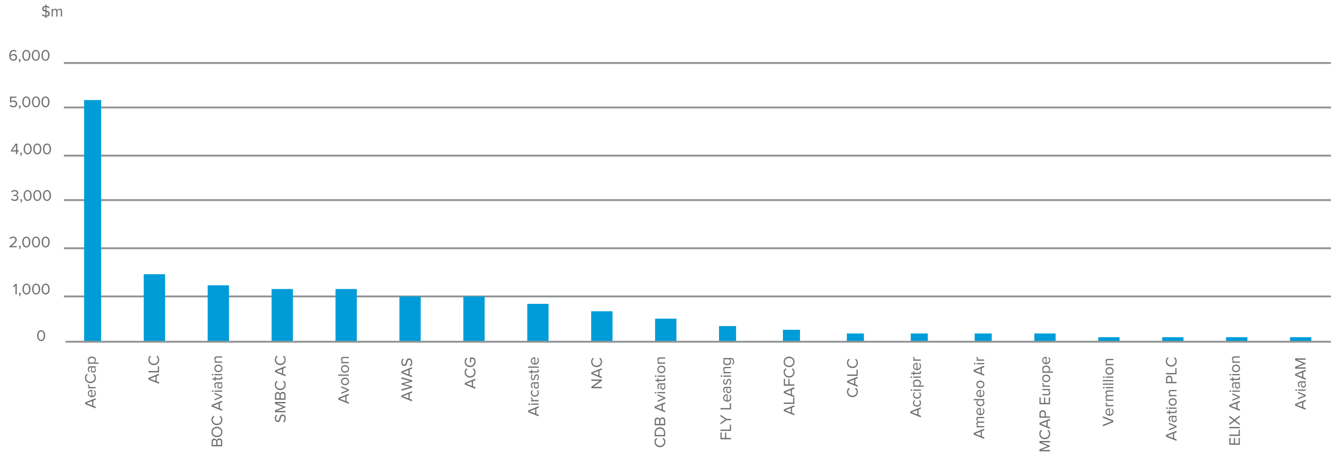
Source: Company reports and The Airline Analyst

Profitability

Figures 3 and 4 show the lessors ranked by revenue and net income. The revenue range is from $5.2 billion for AerCap to $67 million for Elix and $58 million for AviaAM. The chart shows clearly how far AerCap (and GECAS) are ahead of the next tier of lessors including ALC, BOC Aviation, SMBC AC and Avolon. In 2017 Avolon will have the benefit of inclusion of CIT's revenues and DAE Capital AWAS's. Despite the increased liquidity in the marketplace and

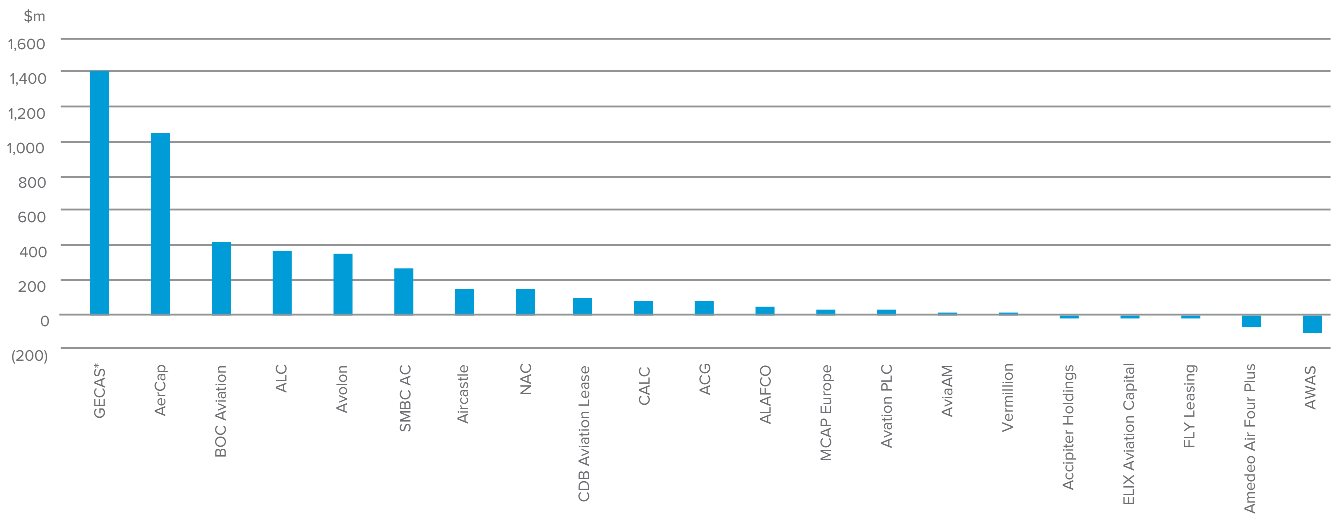
the entry of new investors, yields have been remarkably resilient. In aggregate the profit generated by the lessors in the study (and including GECAS) was $4.7 billion, a $300 million increase on the previous year's $4.4 billion and up from $3.3 billion in 2014/15. Net income was headed by GECAS at $1.4 billion followed by AerCap at $1.1 billion, down from $1.2 billion off a decline in the size of their balance sheet. Coming third in profitability were BOC Aviation followed by ALC.

Figure 3: Total revenue ($ million)



Source: Company reports and *The Airline Analyst*

Figure 4: Net income ($ million)



Source: Company reports and *The Airline Analyst*

Among the key drivers of lessor profitability is the spread between lease yield and debt cost of funds. Figure 5 shows all three, ranked in descending order of yield.

AviaAM leads on this measure. NAC comes second with yield of 17.4%, followed by MCAP Europe at 16% and AerCap at 15.6%.

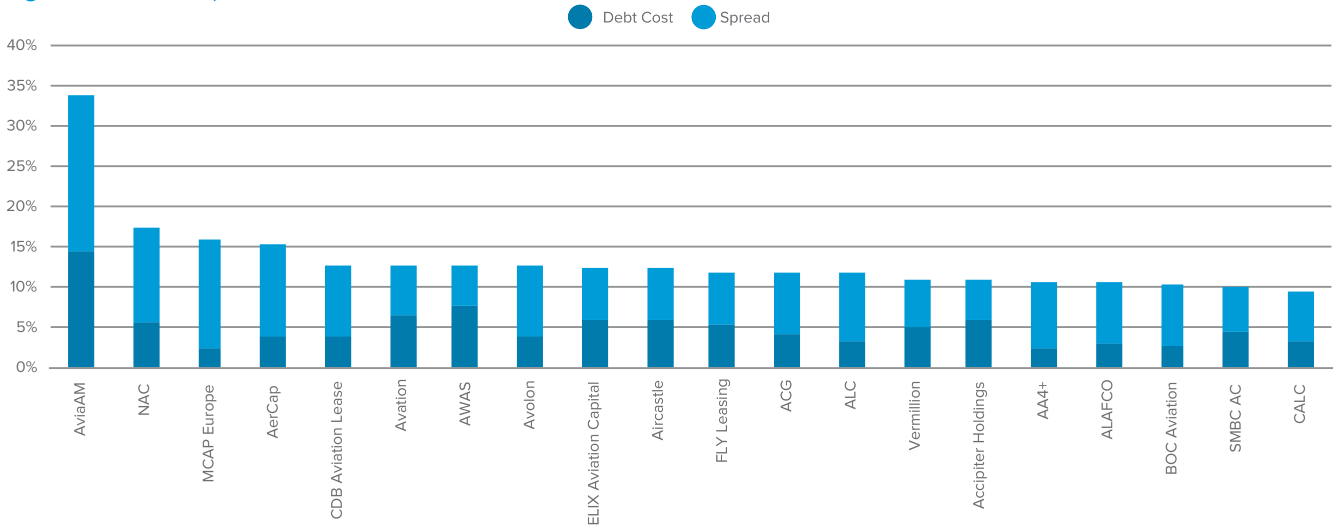
AWAS also generates attractive yields but their relatively high debt costs result in lower margins. BOC Aviation comes third bottom of the lease yield ranking at 11.5% but makes it up with the second lowest debt finance cost of 2.7%, resulting in a spread of 7.8%.

Commercial finance costs range from AA4+'s 2.5% and BOC Aviation's 2.7% to AviaAM's 14%. Others at the low end of the scale include ALAFCO and AerCap. MCAP and SMBC AC have a low debt cost but both have large amounts of shareholder provided debt.

ALC shows a creditable 3.7% average cost of debt. At the higher end are Aircastle, Avation, FLY and AWAS.

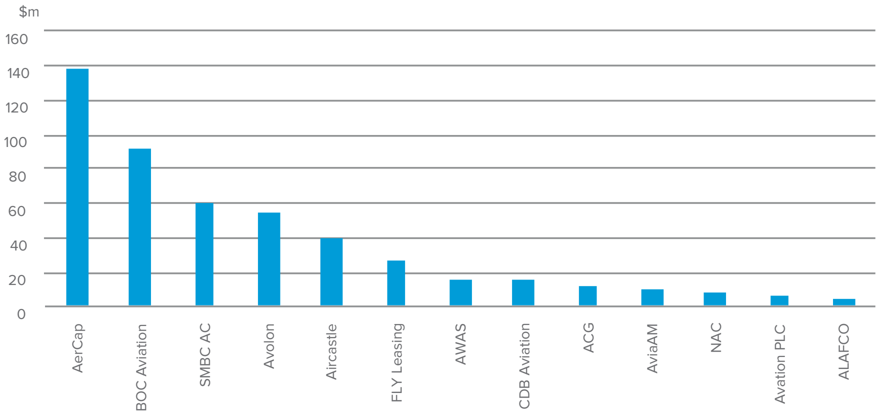
NAC showed a sizeable reduction in cost of debt from 6.4% to 5.6% in the prior year (and may show further improvement when they release their 2016/17 financials shortly).

Figure 5: Yield, spread and debt cost



Source: Company reports and *The Airline Analyst*

Figure 6: Gain (loss) on disposal of aircraft



Source: Company reports and *The Airline Analyst*

Gains/losses on sales

Aggregate Plant, Property and Equipment for the lessors in the study (excluding GECAS) is $121 billion. Gains booked were $518 million, 10% up on 2015/16 and double the prior year, and 13% of reported profit before tax. Gains from aircraft sales made a significant contribution to the profitability of a number of lessors as shown in Figure 6.

Financial flexibility

Impairments
Impairments were not universal but had a significant impact on AWAS, ACG, NAC and FLY in particular, as shown in Figure 7.

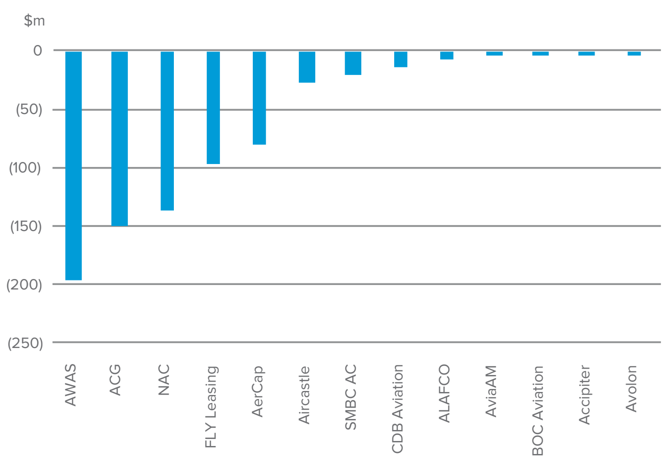
Financial Flexibility
We assess four elements of financial flexibility – leverage as measured by the debt/equity ratio, level of secured debt relative to tangible assets, EBITDA (earnings before interest, tax, depreciation and amortisation) interest coverage and liquidity.

Leverage
We measure leverage using a simple debt/equity ratio made slightly complicated as a number of lessors use parent loans as a more-or-less permanent part of their capital structure.

Figure 8 therefore shows leverage both counting parent company loans as debt and as equity. You can see this is quite significant for a few lessors. On the latter basis the majority of the lessors are in a range of 2x-4x.

Debt structure
Borrowing unsecured has many attractions, being more flexible and having lower transaction costs than borrowing on a secured basis, though at the cost of higher coupons or margins. The ratings agencies generally cite low levels of secured debt as being a key consideration in granting unsecured investment grade ratings to lessors. AerCap lost its investment grade ratings as a result of its acquisition of ILFC, which increased leverage significantly.

Figure 7: Asset impairment

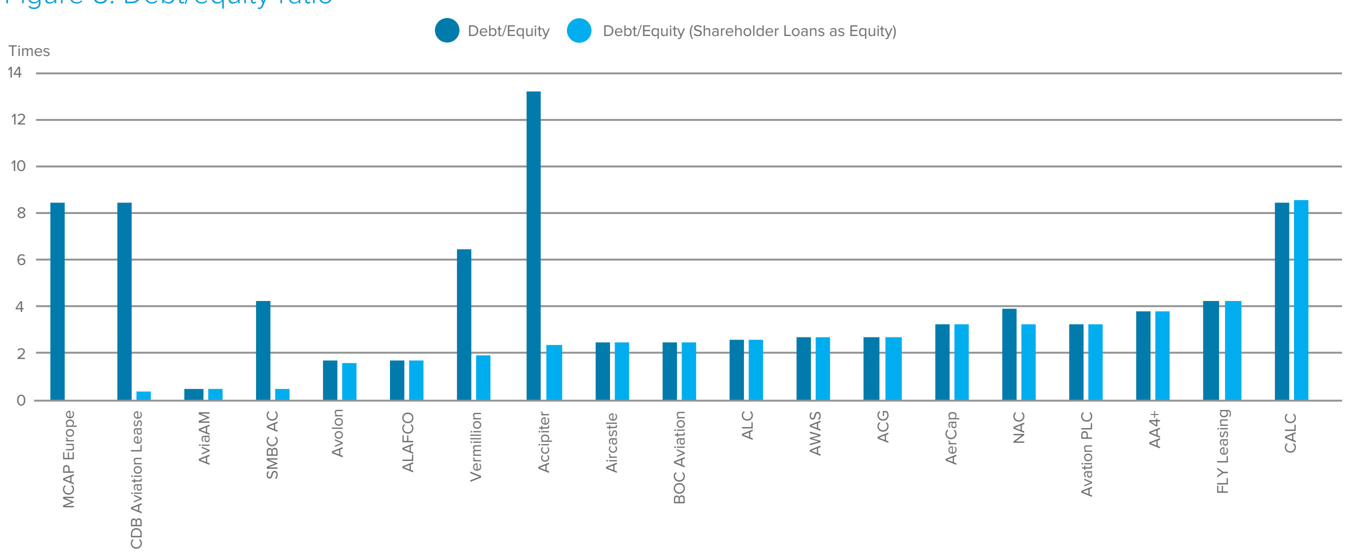


Source: Company reports and *The Airline Analyst*

Figure 9: Lessor unsecured credit ratings

	Fitch	Moody's	S&P	Kroll
AerCap	BBB-(stable)	-	BBB-(stable)	-
ALC	BBB(stable)	-	BBB(stable)	A-
Aircastle	-	Ba1(stable)	BB+(pos)	-
Avation	B+(stable)	-	B+(stable)	
ACG	BBB(stable)	-	A-(stable)	-
Avolon	BB(stable)	Ba2(stable)	BB+(stable)	BBB
AWAS	-	Ba3(stable)	BB(pos)	-
BOC Aviation	A-(stable)	-	A-(stable)	-
DAE	-	B3(stable)	B-(pos)	-
FLY	-	Ba3(stable)	BB-(stable)	BBB
ILFC	-	Baa3(stable)	-	-
NAC	-	-	-	BBB+
SMBC AC	A-(stable)	-	BBB+(stable)	-

Figure 8: Debt/equity ratio



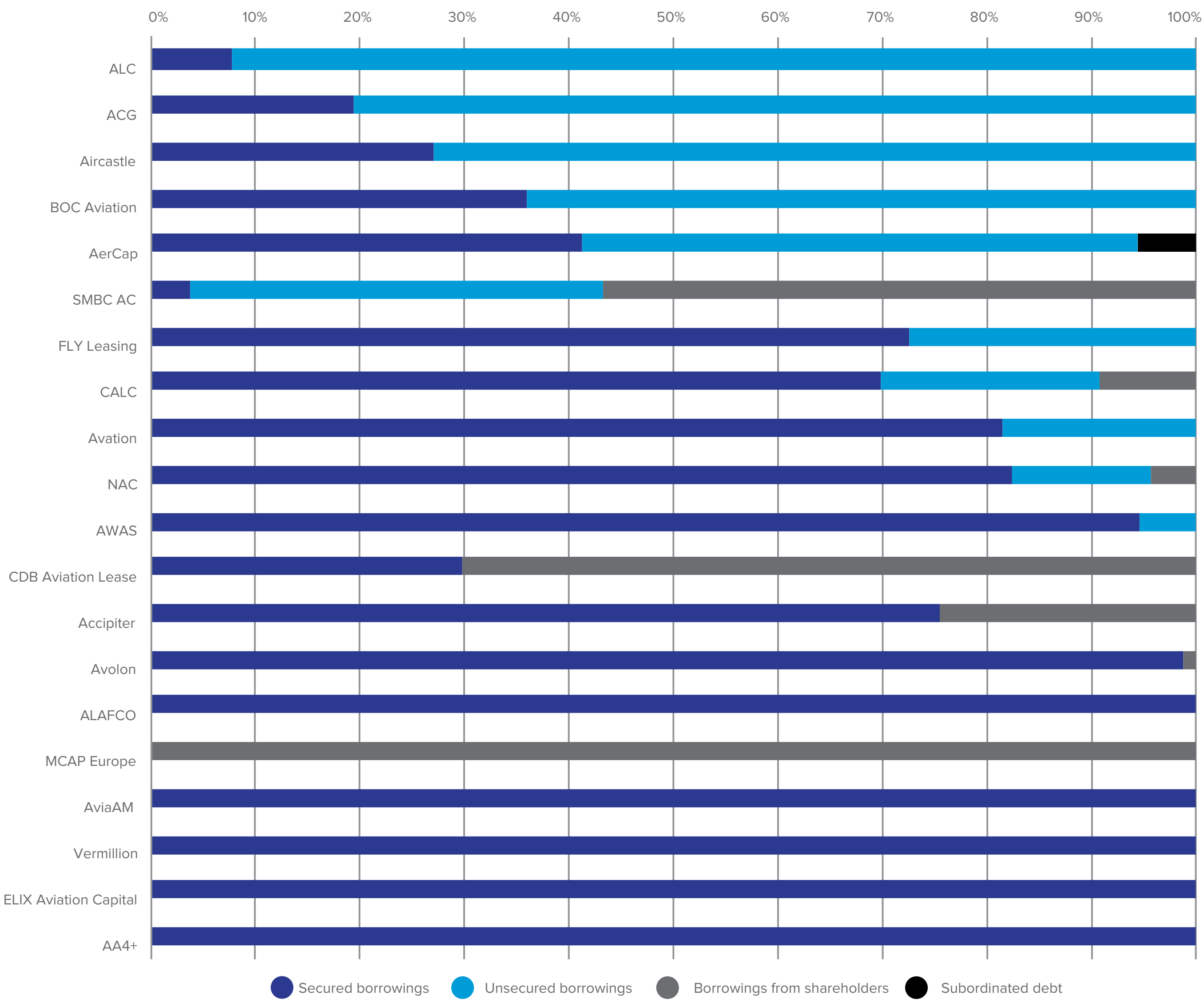
Source: Company reports and *The Airline Analyst*

Since then the lessor has sold assets and reduced leverage and regained their investment grade ratings in late 2015. The other lessors with investment grade ratings are ALC, ACG (who benefit from their ownership by Pacific Life), BOC Aviation and SMBC AC who benefit from their majority bank ownership. S&P cite a ceiling of a BB+ unsecured rating for (previously) private equity owned lessors like AWAS due to financial policy concerns.

Figure 10 shows the debt structures on a proportional basis for the lessors ranked in order of the highest proportion of unsecured debt at the top to least at the bottom. The chart also shows shareholder loans and other loans that could not be classified due to lack of information. As discussed in the Trend analysis section there has been a significant increase in unsecured funding by the industry as a whole, from 34% of total debt in 2012/13 to 46% in 2016/17.

The lessors with the highest percentage of unsecured funding are ALC, ACG and Aircastle.

Figure 10: Debt structure



Source: Company reports and *The Airline Analyst*

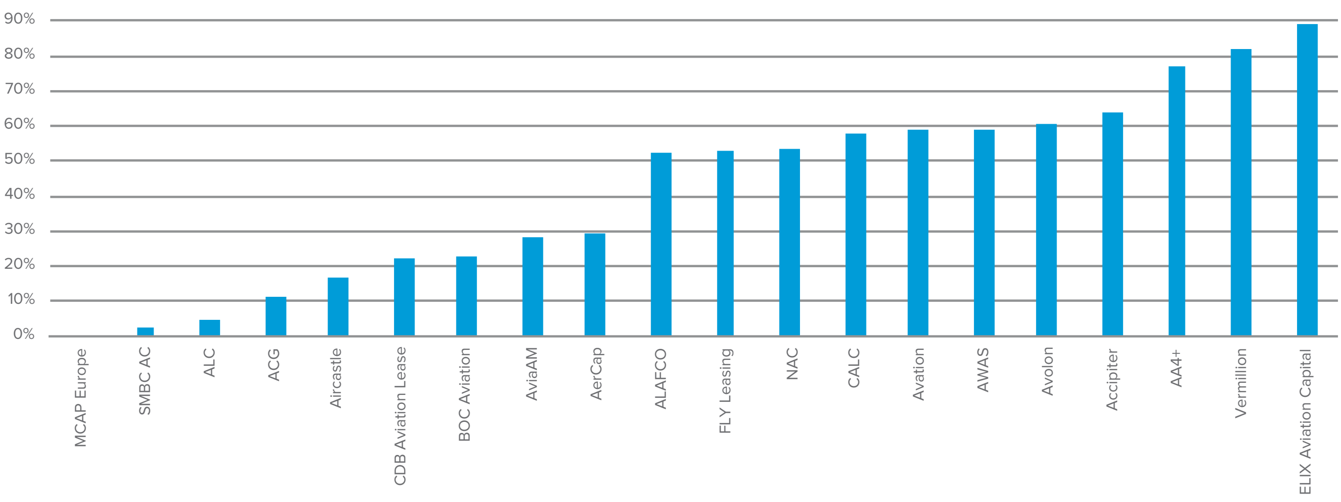
Financial flexibility

Secured debt/Tangible assets
Figure 11 shows secured borrowing as a percentage of tangible assets which indicates the level of protection available for unsecured creditors. The data for MCAP reflects their 100% shareholder funding debt structure. The next five best ranked lessors reflect significant amounts of unsecured funding.

MCAP Europe, SMBC and ALC come top of the list, the last with its 94/6 unsecured/secured debt structure which supports its BBB- investment grade rating. Then follow ACG, Aircastle, CDB Aviation Lease, BOC Aviation, AviaAM and AerCap, who all have significant portions of unsecured debt in their debt structures. AerCap had $14.8 billion of unsecured financing outstanding at balance date, but this represented only 53% of its total debt. BOC Aviation has been a regular visitor to the unsecured capital markets in several jurisdictions. FLY increased its unsecured debt to $691 million in 2016. NAC raised a $230 million unsecured five year term loan facility in 2012/13 and had $345 million unsecured debt outstanding at its 30 June 2016 balance date. SMBC AC's debt structure features a large element of shareholder funding of $4.3 billion and $2.5 billion of loans (all unsecured) from third-parties, the source of which is not disclosed in the financial statements.

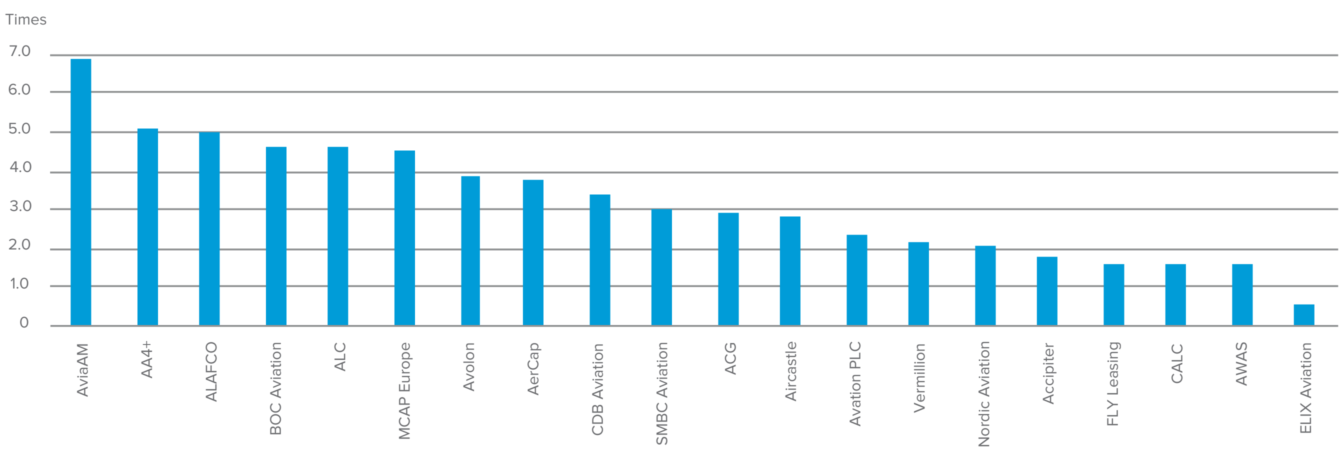
Interest coverage
Interest coverage measured as EBITDA/finance costs is another key aspect of financial flexibility. From Figure 12 we see that the majority of lessors covered by the study have a healthy coverage of at least two times and many have much better coverage than that, particularly AviaAM, AA4+, ALAFCO, BOC Aviation and ALC. A sharp contrast can be seen with some of those further down the chart.

Figure 11: Secured debt/gross tangible assets



Source: Company reports and *The Airline Analyst*

Figure 12: Ebitda/total finance costs



Source: Company reports and *The Airline Analyst*

Liquidity

Figure 13 shows unrestricted cash liquidity as a percentage of total borrowings. AviaAM's liquidity is clearly much higher than the others relative to its debt. For the remainder, this measure ranges from a low of 3% for ACG, ALC and SMBC AC (which has access to parent funding) to a high of 23% for CALC.

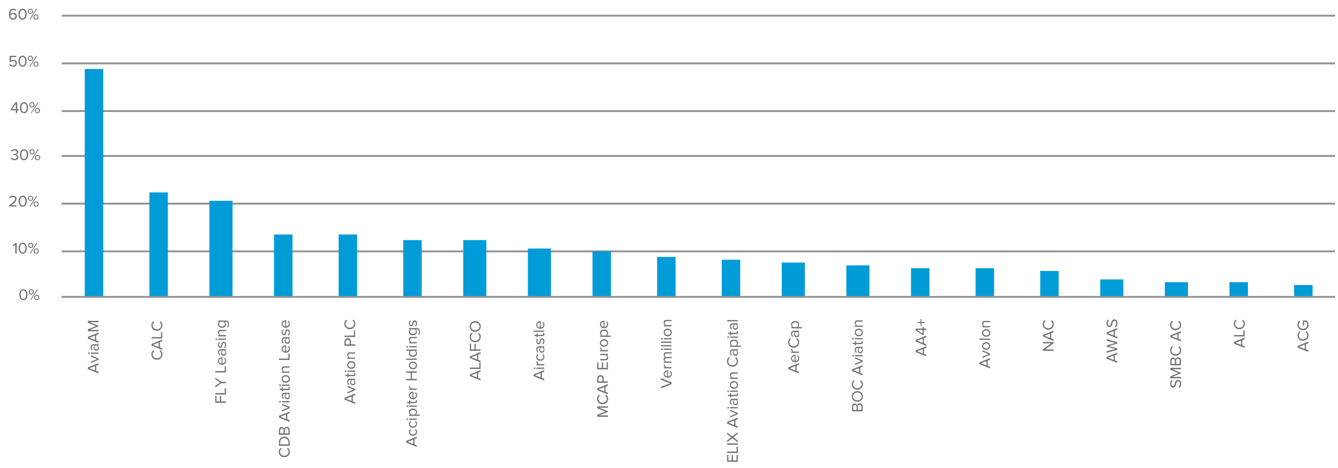
Some of the lessors additionally have committed bank facilities such as BOC Aviation which had $4 billion of such undrawn lines as of 31 December 2016, Aircastle who had $810 million of unsecured revolving credit capacity and ALC who had a $3.2 billion unsecured revolving bank facility, with maturity extended to May 2020. As of 31 December 2016 ACG had $1.72 billion available under its unsecured revolving credit facilities and AerCap had approximately $7.3 billion of undrawn lines of credit under its credit and term loan facilities.

Returns

Profit before tax

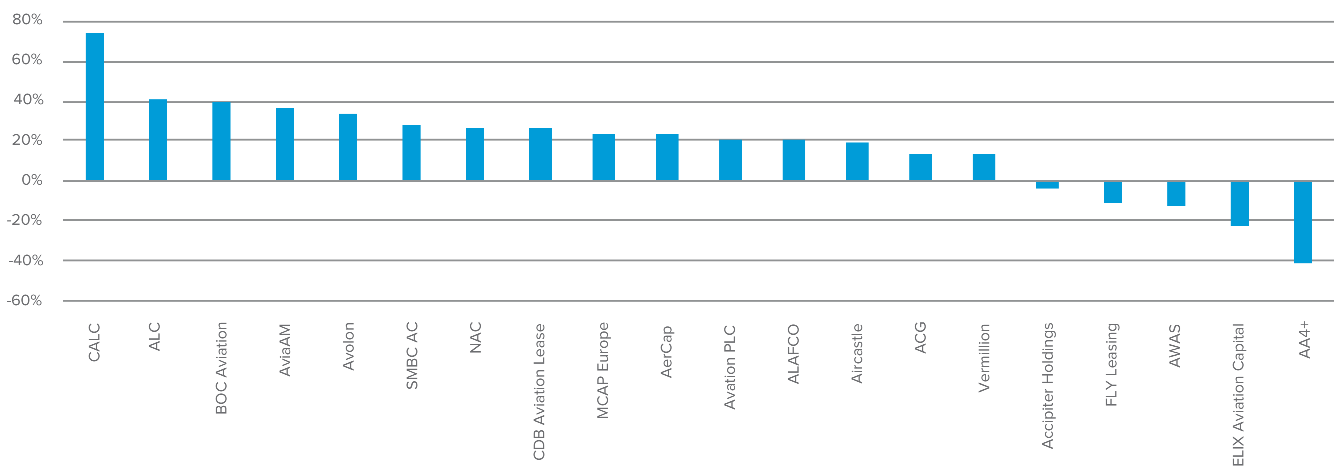
As an overall measure of profitability, we have assessed profit before tax as a percentage of total revenue as shown in Figure 14. This suggests that the lessors at the left side of the chart have a favourable combination of lease yield, funding cost, operating costs and leverage – as well as factors not assessed in this study – fleet utilisation and maintenance/transition costs. The larger lessors with high margins were ALC and BOC Aviation. At the other end of the scale of the traditional lessors were FLY Leasing and AWAS, which were both impacted by impairment charges and relatively high debt costs in AWAS's case. AA4 Plus with its unique capital structure brought up the rear.

Figure 13: Cash/total debt



Source: Company reports and *The Airline Analyst*

Figure 14: PBT margin



Source: Company reports and *The Airline Analyst*

Returns

Tax charge
One of the drivers of net profitability is the tax rate on profits. Figure 15 shows that, with three exceptions, tax charges were all below 20%. So it is not just Ireland and Singapore that would appear to offer attractive fiscal regimes for aircraft operating lease companies. However prima facie, the US does not look a very attractive jurisdiction!

Return on equity
Return on average equity is shown in Figure 16. Just under half of the lessors delivered a return on equity in excess of 10% in their most recent annual financial period. Elix's, CDB Aviation Lease Finance's and CALC's returns are commendable but should be interpreted in conjunction with their high leverage. NAC with 16.2% arguably generated the best returns of the group for those lessors with a more normal balance sheet structure. Other established lessors like BOC Aviation and AerCap generated solid low teens returns, but down from "mid-teens" last year.

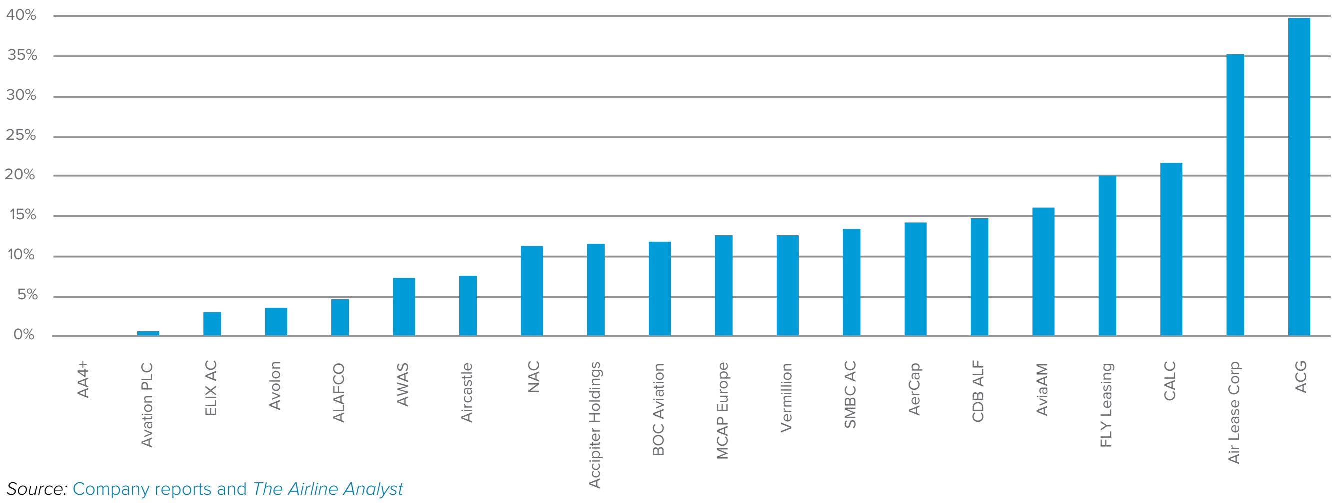
Conclusion
This review has shown some of the key dynamics affecting aircraft lessors' business models which are more varied than would appear the case at first inspection. Lease yield, debt cost, asset selection, asset utilisation and re-marketing capabilities are all critical components of the aircraft operating leasing business.

Get these right, and the aircraft leasing business can offer substantial "libor-plus" returns to equity investors.

However lease yields and ROEs appear to be trending down and it will be interesting to see the implications for this set of lessors in a year's time.

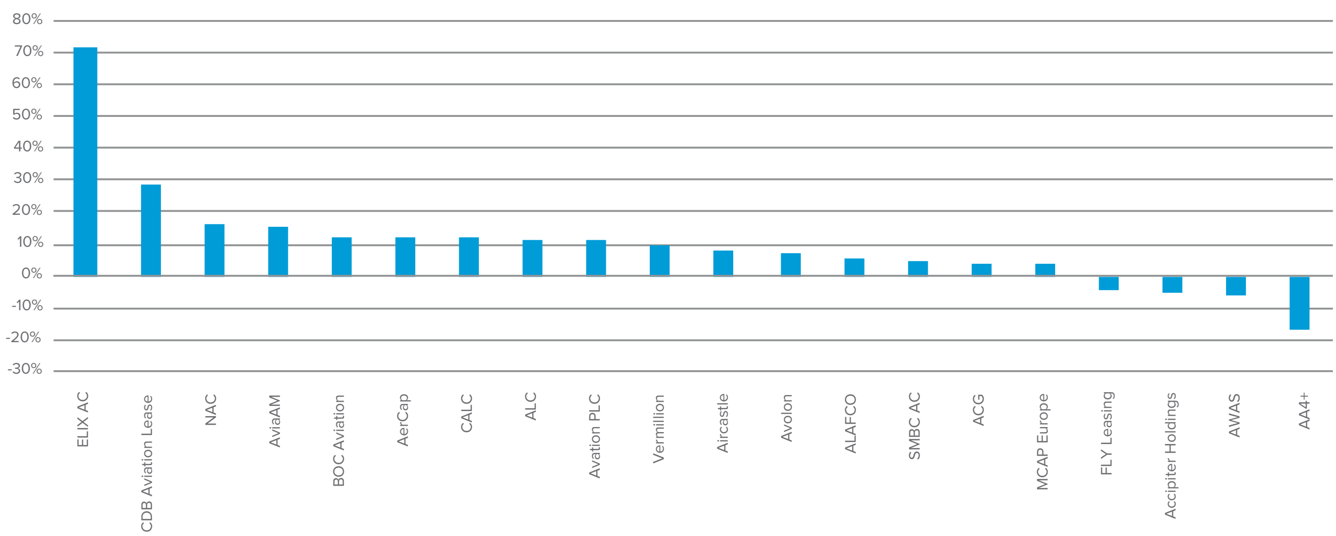
Please direct any questions or comments to **mduff@theairlineanalyst.com**.

Figure 15: Tax rate



Source: Company reports and *The Airline Analyst*

Figure 16: Return on average equity (shareholder loans as equity)

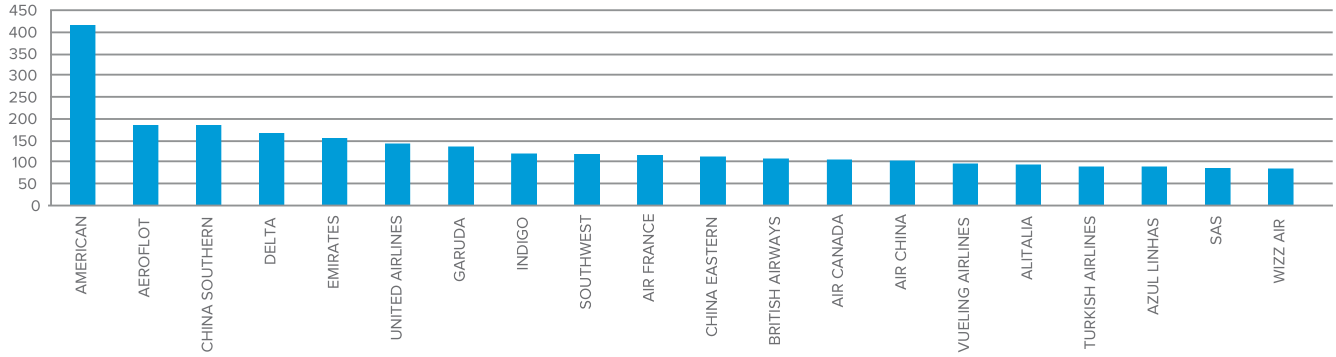


Source: Company reports and *The Airline Analyst*

Analysis of the **global leased fleet**

Figure 1: Biggest lessees by number of aircraft

Source: Airfiance Journal's Fleet Tracker



Airfinance Journal's Fleet Tracker database includes 10,586 aircraft, leased by 122 commercial lessors with at least 10 aircraft to 765 airlines in 146 countries (data as of end August 2017). Aircraft leased by "captive" lessors such as Synergy and Aircraft Purchase Fleet and by the OEMs are excluded. Aggregate orders by the commercial lessors total 3,206 aircraft. The average age of the existing leased fleet is 11.1 years and 713 aircraft (6.4%) are reported as being in storage.

The industry is heavily concentrated. The top 10 lessors account for 48% of the total fleet count and 60.3% by value (top 10 value – $181.3 billion). Nevertheless, the smaller lessors provide value to the market place in dealing with older or more specialised aircraft. They also may be prepared to do business with some of the more challenging regions of the world or have leading positions in their niche markets.

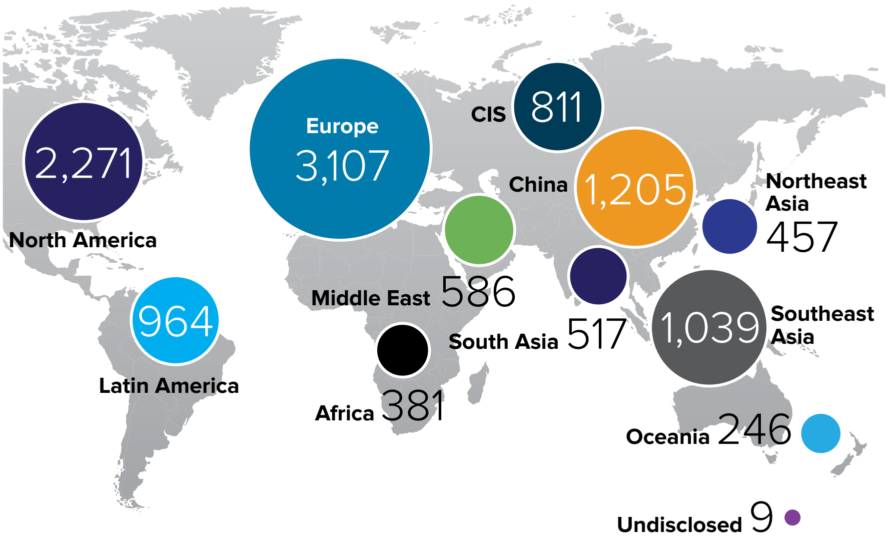
Airlines with the most leased aircraft

Figure 1 shows the top 20 lessee groups by number of aircraft. Just as the leasing industry is heavily concentrated in a relatively small number of players, the airlines to whom they are leasing are forming increasingly concentrated groups. Such concentration could reduce the ability of the lessors to diversify their portfolio risks due to concentrations of exposure. Restructurings, such as at Air Berlin, can lead to reductions in fleet sizes which can cause severe lessor pain. Other examples include the restructurings at Alitalia and GOL.

Geographic distribution of leased aircraft

The geographic distribution of leased aircraft is shown in Figure 2. While the chart shows Europe in the lead, this is because we split Asia-Pacific into sub regions given their varying dynamics. Hong Kong and Macau are included in the China segment. We also decided to show Russia and the CIS as a segment separate from Europe.

Figure 2: Geographic distribution of leased aircraft

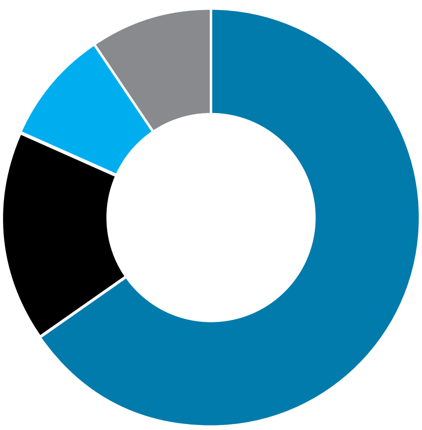


Source: *Airfiance Journal*'s Fleet Tracker as of 31 August 2017

Breakdown of Leased Fleet

Figure 3 shows a breakdown of the leased fleet by body-type of aircraft. A full 66% of the leased fleet is in the narrow-body category split mostly between the A320 and 737 families. Only 16% is widebody, though in value terms their share would be much more significant, especially with the A350 and 787 finding a lot of favour among lessors.

Figure 3: Leased aircraft body type



Narrowbody	7,597
Widebody	1,897
Regional jet	1,007
Turboprop	1,092

Regional jets

The most significant development over the last year has been the reduction in size of the GECAS portfolio from 344 to 260. As can be seen, however, GECAS remains the largest player with NAC in second place, having increased its fleet from 99 to 141.

Castlelake has reduced its exposure to this market over the past 12 months while Regional One's fleet is now at 23 units.

Avmax, Falko and Avolon (which absorbed the 33 aircraft that CIT Aerospace had at this time last year), are other significant lessors in this segment.

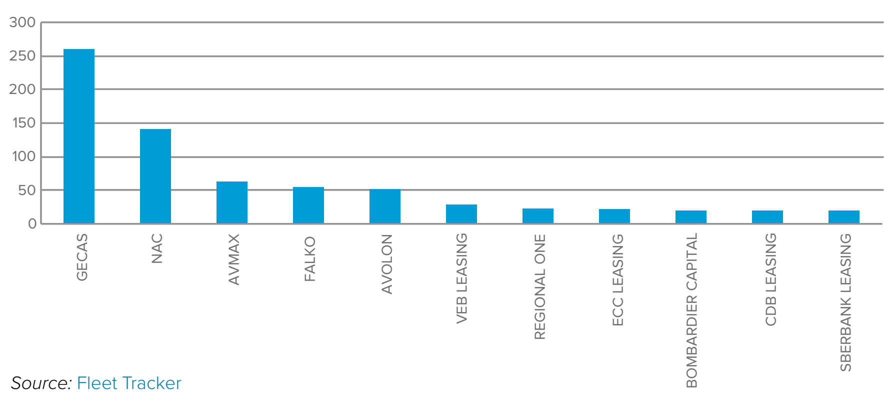
Turboprops

Turboprops are a significant niche market, dominated by one lessor, Nordic Aviation Capital. However, other lessors have a presence, as shown in Figure 5, attracted by high yields.

The biggest increase in 2016/17 has come from Avmax, up from 57 to 87 aircraft, taking second place from Elix Aviation Capital. Truenoord Capital backed by its new investors, Blackrock and Aberdeen Asset Management may also be expected to increase its exposure.

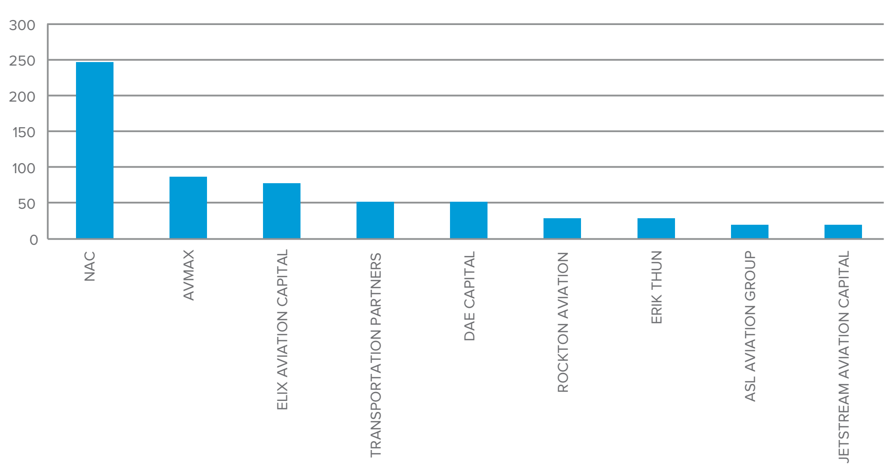
ALC exited the market with the 25-aircraft portfolio sale to NAC last year. Among other sellers are ASL Aviation Group, which reduced its fleet by almost a third.

Figure 4: Top 10 lessors of regional jets



Source: Fleet Tracker

Figure 5: Top turboprop lessors



1 GECAS

General Electric signed its first aviation lease in 1967 and, in 1993, formed GE Capital Aviation Services (GECAS), its aviation finance business, which is the world's biggest leasing company by fleet size, with a total of 1,321 aircraft.

The lessor has 402 aircraft on order – including the Airbus A320neo, Boeing 737 Max 8, A321neo and 787-10 models.

GECAS' main source of funding is its parent company, which it says gives it access to considerably cheaper financing than most of its peers, and less exposure to market volatility. In addition, GECAS provides loans collateralised on about 400 aircraft and has about $44 billion-worth of assets on its books.

While leasing has been consistent for several years, accounting for about 40% of the global fleet since 2009, given the original equipment manufacturer's projections for expansion of the global fleet, roughly doubling over the next 20 years, even a flat rate of percent leased will provide ample opportunities for growth, says GECAS.

"Leasing is attractive because it offers fleet flexibility, obviates residual value risk and preserves cash. In the leasing sector, where certain global regions have recently experienced a large number of new entrants, some consolidation of lessors is likely," adds the lessor.

GECAS has been taking advantage of market conditions and has sold about $4 billion-worth of aircraft annually for the past couple of years, which has resulted in a gradual decline in the size of its balance sheet.

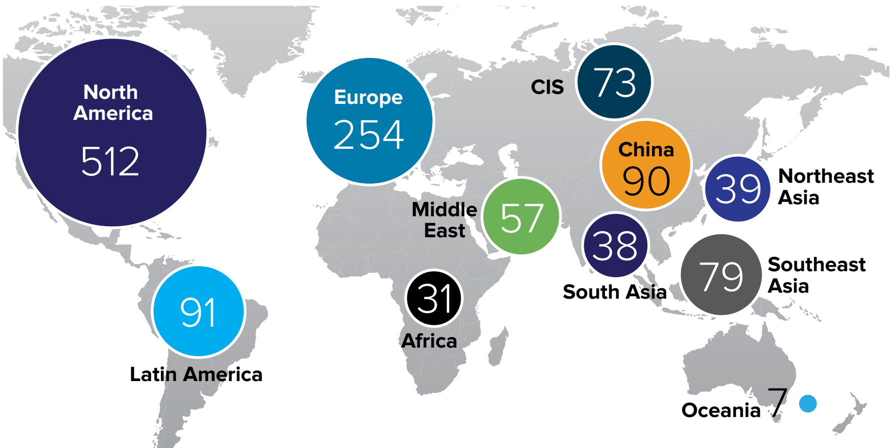
However, speaking with *Airfinance Journal*, GECAS president and chief executive officer, Alec Burger, indicates the lessor will return in 2018 to a "more normalised rate" of sales of a "couple of billion dollars-worth" of transactions each year.

He adds: "Over the next two to three years, the [GECAS] balance sheet is going to start growing" through a reduction in sales and increased volume.

GECAS will also build its off-balance sheet portfolio through separate transactions, such as those through its newly announced $2 billion sidecar – Einn Volant Aircraft Leasing (EVAL) – with Caisse de dépôt et placement du Québec, which will ease its exposure limits where "GECAS has reached concentration limits with many of our customers, so EVAL makes it possible to do a little more business with them", says Burger.

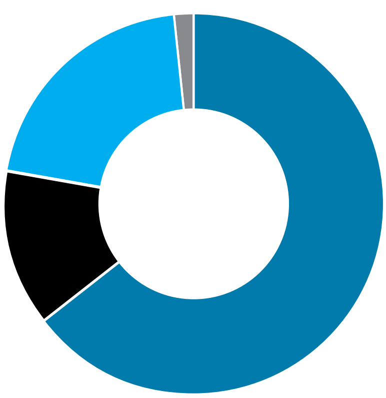
As older aircraft are retired or taken offline, GECAS sees opportunity in new-technology aircraft, as shown by its recent orders for 75 Max aircraft and 100 A320neos.

GECAS fleet by region of lessee



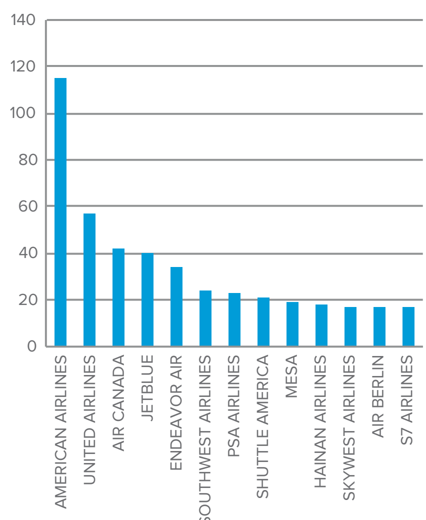
Source: *Airfinance Journal*'s Fleet Tracker as of 31 August 2017

GECAS fleet by aircraft type



Narrowbody	822
Widebody	170
Regional jet	260
Turboprop	19

GECAS top lessees



GECAS Key facts

Name: GE Capital Aviation Services (GECAS)

Country: USA and Ireland

Founded: 1993

Ownership: General Electric

Company head office: Shannon, Ireland, and Norwalk, Connecticut, USA

Number of employees: about 575

Size of fleet: 1,321 fixed-wing (owned and serviced), 240 rotary wing

Average age of fleet: N/A

Number of customers: about 250

Orderbook: 402 aircraft

Unsecured credit ratings: no standalone credit rating for GECAS (GE Capital has a AA+ rating)

Total assets (as of 30 June 2017): about $44 billion

Net income: part of GE company (GECAS $1.4 billion in 2016)

2 AerCap

AerCap was established in 1995 and has its headquarters in Dublin. The lessor listed on the New York Stock Exchange in 2006 and acquired rival company ILFC from AIG in May 2014.

The Irish-based lessor boosted its funds this year with a $1 billion senior notes offering, which priced at 3.65%. The notes are due in July 2027 and AerCap intends using the net proceeds from the notes for general corporate purposes.

AerCap is maintaining an optimistic outlook regarding the Gulf region despite concerns about the three dominant Gulf carriers, which represent a sizeable percentage of the widebody backlog. Also, some of these carries have announced restructuring efforts this year.

The lessor's chief executive officer, Aengus Kelly, plays down any worries about the Gulf carriers and the region's orderbook.

We have certainly seen a region having a much bigger share of the backlog, having gone through significant stress for a long period of time, and that would be the North American market. Most North American airlines have filed for bankruptcy protection multiple times, with massive backlogs, and massive amounts of airplanes in the system - far greater than what is in the Gulf," he says.

Kelly stresses that the Gulf carriers will "work their way through their issues".

"This is nothing that we haven't seen before and the OEMs [original equipment manufacturers] are not going to put the national carriers of these countries into bankruptcy. That will not happen. They will work with them. They will defer what needs to be done."

As is the case for any airline, deferrals are an "expensive discussion", he admits, adding: "But that's how the OEMs make a lot of money, by deferrals... so it is part of the OEM business model, and their profit margin, to expect deferrals."

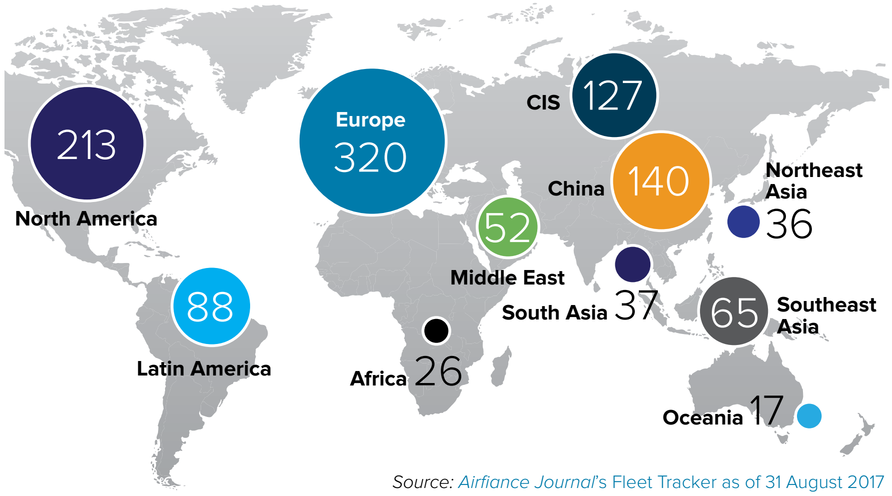
The lessor improved its second-quarter net income to $282.9 million from $233.3 million in the year-earlier period because of higher gains on asset sales and maintenance rents and lower maintenance rights expense.

The lessor executed 108 aircraft transactions in the quarter, including 25 widebodies.

It also repurchased 6.5 million shares in the quarter for $293 million and 14.2 million shares year to date to 28 July for $639 million.

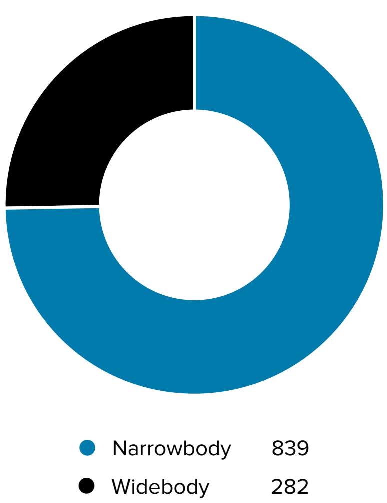
Basic lease rents were $1.05 billion for the three months, compared with $1.10 billion for the same period in 2016. The decrease was primarily because of the sale of mid-life and older aircraft during 2016 and 2017, which reduced average lease assets.

AerCap fleet by region of lessee

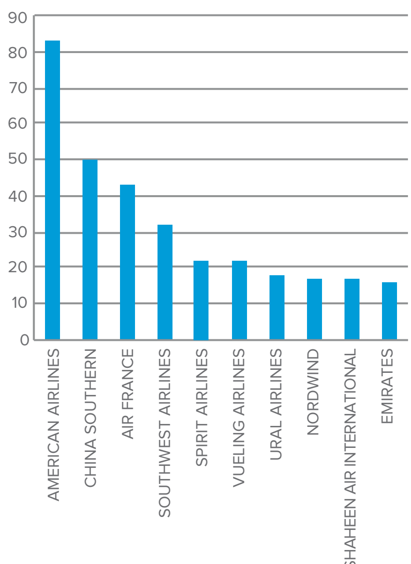


Source: *Airfinance Journal*'s Fleet Tracker as of 31 August 2017

AerCap fleet by aircraft type



AerCap top lessees



AerCap Key facts

Name: AerCap

Country: Ireland

Founded: 1995

Ownership: Public company listed on the New York Stock Exchange

Head office: Dublin, Ireland

Number of employees: 398

Size of fleet: 1,110 owned and managed

Average age of fleet: 7.3 years

Number of lessees: about 200

Orderbook: 429

Total assets (as of 30 June 2017): $41 billion

Net income: $1.05 billion full-year 2016

3 Avolon

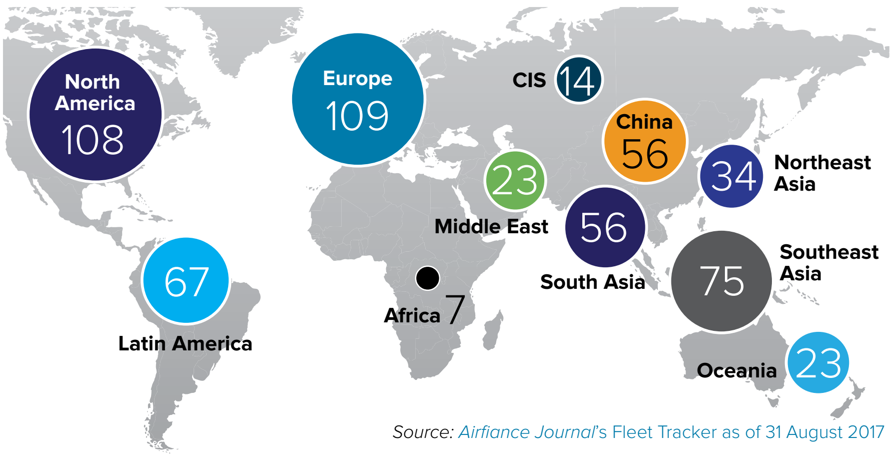
Avolon is an aircraft leasing company based in Dublin, Ireland. It was founded in May 2010 by Domhnal Slattery, and a team from RBS Aviation Capital, including John Higgins, Dick Forsberg, Tom Ashe, Andy Cronin, Simon Hanson and Ed Riley, with initial capital of $1.4 billion.

The $1.4 billion initial equity commitment was from four leading international investors: Cinven, CVC Capital Partners, Oak Hill Capital Partners and the Government of Singapore Investment Corporation.

The lessor had developed a portfolio of 227 owned, managed and committed aircraft when it listed on the New York Stock Exchange in December 2014. At listing, Avolon was the largest-ever listing of an Irish-founded company on the NYSE.

In September 2015, Avolon announced that Bohai Leasing, the Chinese leasing and financial services company affiliated with HNA Group, made a cash offer for 100% of its common shares at a price of $31 a share. In January 2016, Avolon announced the completion of its acquisition by Bohai Leasing, and assumed control of Hong Kong Aviation Capital, a leasing entity also owned by Bohai Leasing. In April 2017, It announced the completion of the acquisition of the CIT Group aircraft leasing business creating the world's third-largest aircraft leasing company with a 31 March 2017 fleet of 850 aircraft valued in excess of $43 billion. In June, Avolon announced a memorandum of understanding with Boeing for 75 737 Max 8 aircraft, together with 50 options.

Avolon fleet by region of lessee



Source: *Airfinance Journal*'s Fleet Tracker as of 31 August 2017

As of 30 June, Avolon had an owned, managed and committed fleet of 921 aircraft valued at about $50 billion.

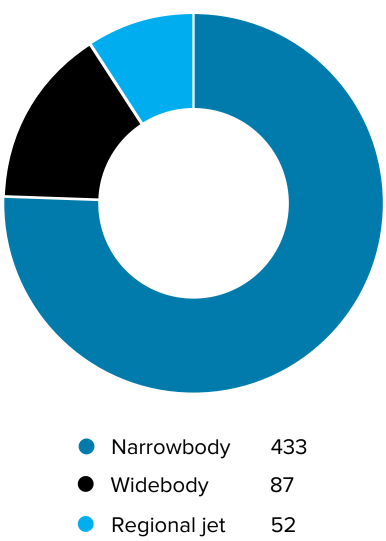
By the end of August, it had 905 aircraft owned, managed and committed. Its active fleet included 591 aircraft while another 314 aircraft were on order.

Since its inception, Avolon has focused on liquid single-aisle aircraft and grown its business via the sale and leaseback market and speculative orders with manufacturers.

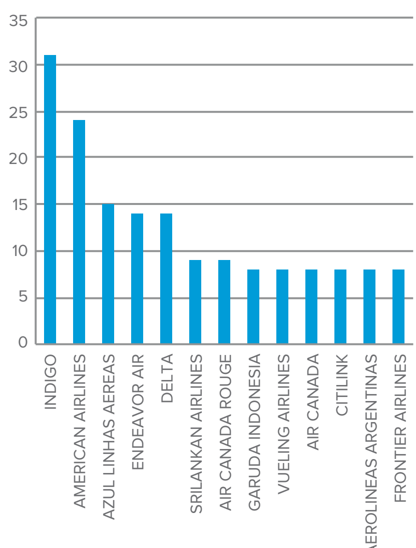
It had 460 narrowbody aircraft in service along with 252 narrowbodies on order as of 30 August. But the lessor also had about 90 widebodies in its fleet and orders for another 60. Avolon also has regional exposure to Embraer and Bombardier products.

Commenting on 2016, Slattery, Avolon's chief executive, says: "In the last year, Avolon has experienced transformational growth, while delivering strong performance across all key business and financial performance measures. The year to date has been headlined by the completion of the acquisition of the aircraft leasing business of CIT and the signing of a memorandum of understanding with Boeing for 75 Boeing 737 Max aircraft. Avolon has a total available liquidity of over $4 billion and the youngest, most attractive fleet of the world's leading lessors. We remain excited about the prospects for the business and the opportunity for growth in the period ahead."

Avolon fleet by aircraft type



Avolon top lessees



Avolon Key facts

Name: Avolon

Country: Ireland

Founded: 2010

Ownership: Bohai Capital

Head office: Dublin, Ireland

Number of employees: 250

Size of fleet: 921 owned, managed and committed fleet (30 June 2017)

Average age of fleet: 4.9 years (30 June 2017)

Number of lessees: 151

Orderbook: 347 aircraft (30 June 2017)

Unsecured credit ratings: Fitch BB; Moody's Ba2; S&P BB+; Kroll BBB+

Total assets: $26.6 billion in assets at end of Q2

Net income: $232 million for H1 2017

4 SMBC Aviation Capital

Although most of its business is based out of Dublin, SMBC Aviation Capital is owned and supported by a consortium of Japanese institutions: Sumitomo Mitsui Banking Corporation (SMBC), Sumitomo Mitsui Finance and Leasing Company Limited (SMFL) and Sumitomo Corporation.

Before January 2012, when the lessor was sold to Sumitomo Mitsui Financial Group for $7.6 billion, the company was known as RBS Aviation Capital and was owned by Royal Bank of Scotland Group.

SMBC Aviation Capital, which has been profitable for 15 consecutive years, has more than 160 staff working in Dublin, as well as in China, France, Hong Kong, Japan, the Netherlands, Singapore and the US.

Peter Barrett, the lessor's chief executive officer, says: "It's been a good year for SMBC Aviation Capital, one in which we recorded strong financial and operational growth, which is testament to the strength of our strategy of continued investment in liquid, new-technology aircraft, combined with trading through the cycle."

In 2017, the Dublin-based lessor added the first Airbus A350 to its portfolio and secured a number of sale and leaseback transactions, building new customer relationships with airlines such as SAS, West Air and Philippine Airlines.

The company also experienced significant investor demand for its portfolio and sold 35 aircraft to 21 different investors, 18 of which were new customers, making 2017 one of the strongest years for the lessor's aircraft trading side of the business. These trades lowered SMBC's average overall portfolio age to 4.5 years.

On top of this, the lessor closed the sale of $500 million principal amount of 3%, five-year senior unsecured notes due July 2022.

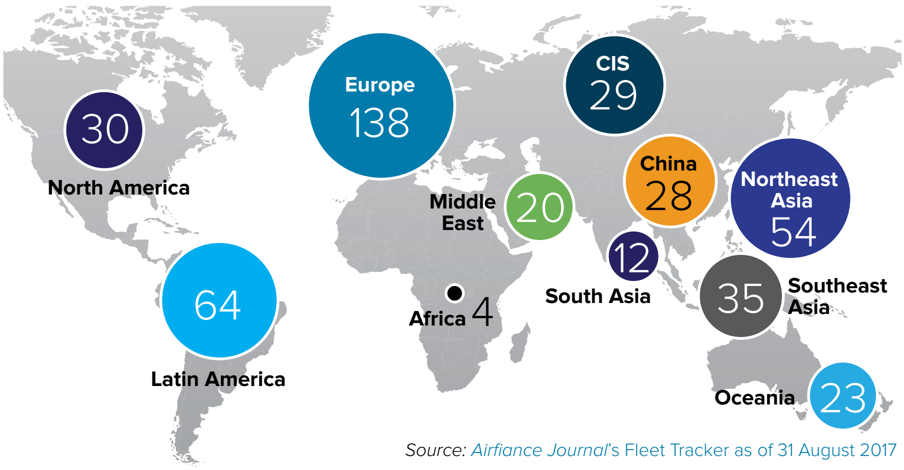
"Our orderbook consists of one of the most modern and technologically advanced fleets in the industry and our objective is to continue to build on our placement programme over the coming year," says Barrett. "All of our orderbook aircraft are placed up to May 2019, and our focus during the current financial year will be on placing aircraft to 2020 and beyond.

"We are also future proofing our business by continuing to trade our portfolio so that we can have the youngest fleet in the industry. We sold 35 aircraft during the year, with an average age of 9.8 years, and so we are well on our way to achieving this goal."

Barrett is optimistic about the health of the leasing industry, as well his lessor's performance.

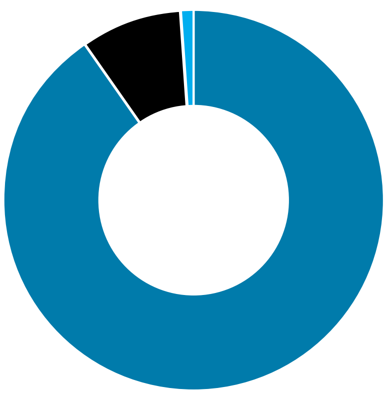
"It is a competitive market and we are at a strong part of the industry cycle," he says, "but the performance of the core business is good. We remain confident in the outlook for the business especially in growth markets like Asia and South America."

SMBC Aviation Capital fleet by region of lessee

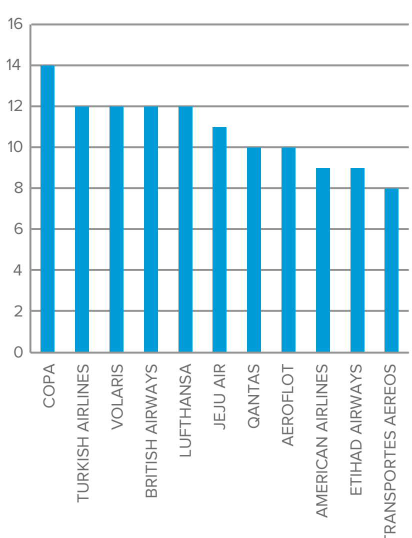


Source: *Airfiance Journal*'s Fleet Tracker as of 31 August 2017

SMBC Aviation Capital fleet by aircraft type



SMBC Aviation Capital top lessees



SMBC Aviation Capital Key facts

Name: SMBC Aviation Capital
Country: Ireland
Founded: 2001
Ownership: SMBC, SMFL and Sumitomo Corporation
Head office: IFSC House, Dublin, Ireland
Number of employees: 175
Size of fleet: 670
Average age of fleet: 4.5 years
Number of lessees: 150-plus customers in more than 50 countries
Orderbook: 110 Airbus and 90 Boeing 737 Max
Unsecured credit ratings: Fitch and S&P A-/BBB+
Total assets (owned and managed): $16 billion at 31 March 2017
Net income: Total revenue of $1.162 billion. Operating profit up 25% to $661 million

5 Nordic Aviation Capital

Nordic Aviation Capital (NAC) is the world's largest privately owned regional aircraft trading and leasing company, which was founded in 1990 by aviation entrepreneur Martin Møller. It has successfully evolved from a one-aircraft business to a company that has a fleet of more than 400 aircraft, with assets of $6.6 billion.

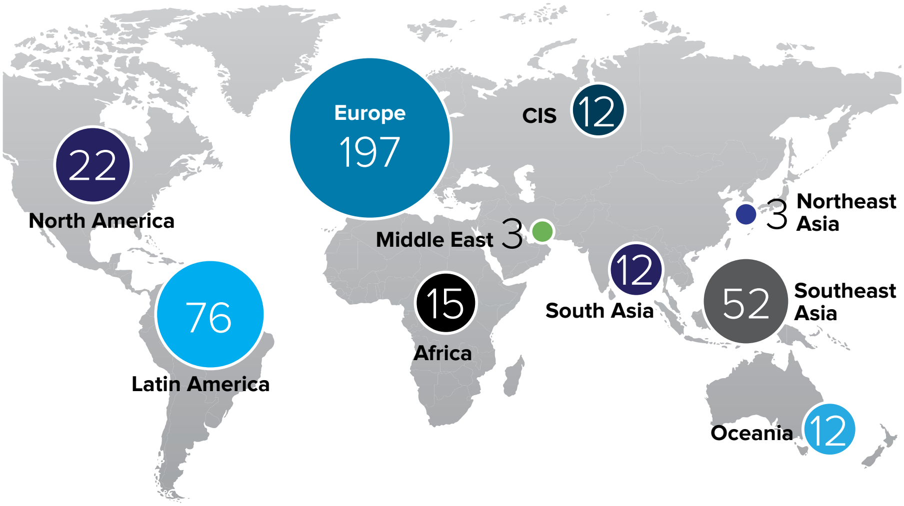
For more than 25 years, NAC has been providing flexible, customised and competitive fleet solutions to many of the world's leading airlines and now offers the largest portfolio of regional aircraft for lease in the world.

Over the past 24 months, NAC has grown through the acquisition of two leasing companies, a portfolio of 50 leased aircraft from Air Lease Corporation and naked aircraft purchases. In addition, the company continues to strengthen its ties with its existing customers while also growing its customer base.

Along with its portfolio expansion, the Danish-based lessor also has diversified its funding sources in 2017 and has obtained facilities in excess of $500 million. These facilities are a landmark transaction for the lessor.

"There is no doubt that the US private placement market has value to NAC, and the great support to NAC's business model may well lead to further issuing in due course," says Steve Gorman, managing director and head of global treasury.

NAC fleet by region of lessee

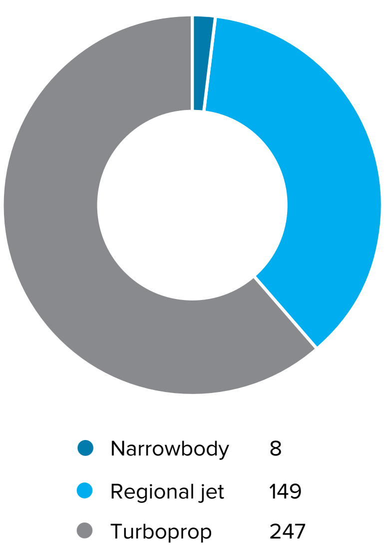


Source: *Airfiance Journal*'s Fleet Tracker as of 31 August 2017

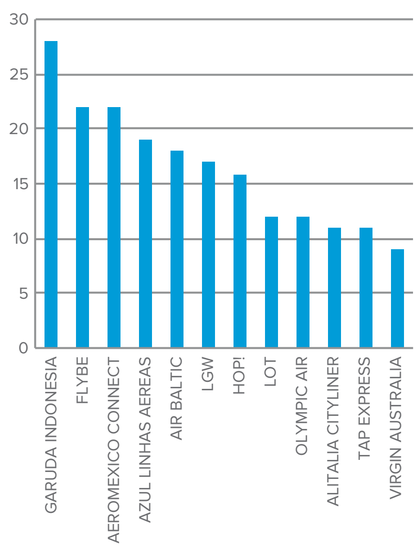
In January, NAC secured a public rating and was provided a subsequent upgrade by Kroll to BBB+/BBB. These developments have attracted lots of interest from the financing community.

"Indeed, it is exciting times in NAC, particularly so in the past 12 months," says Møller, NAC's chairman. "Over the past year, we have announced some landmark deals such as SA Airlink. We have also entered new markets and acquired many new customers. NAC now has over 70 customers located in nearly 50 countries. In addition to this, we have obtained unsecured funding through the private placement market, and I believe that this will help both NAC and our ability to react to our customers' needs into the future."

NAC fleet by aircraft type



NAC top lessees



NAC Key facts

Name: Nordic Aviation Capital

Country: Denmark

Founded: 1990

Ownership: Martin Møller, EQT

Registered office: Limerick, Ireland

Number of employees: 194

Size of fleet: 395 (as of 30 June 2017)

Average age of fleet: 6.5

Number of lessees: 69

Orderbook: 54

Unsecured credit ratings: Kroll BBB+/BBB

Total assets: $6.6 billion

Business performance net income: $152.7 million

*All figures are at end of June 2017

6 BBAM

BBAM is the largest independent aircraft manager with 402 aircraft under its management. It is a privately held company.

As of 15 September, BBAM is owned 50% by the private equity firm Onex and 50% by its management. On the consummation of a publicly announced transaction under which the sovereign wealth fund GIC will acquire 30% of BBAM, the company will be owned 35% by Onex, 35% by its management and 30% by GIC.

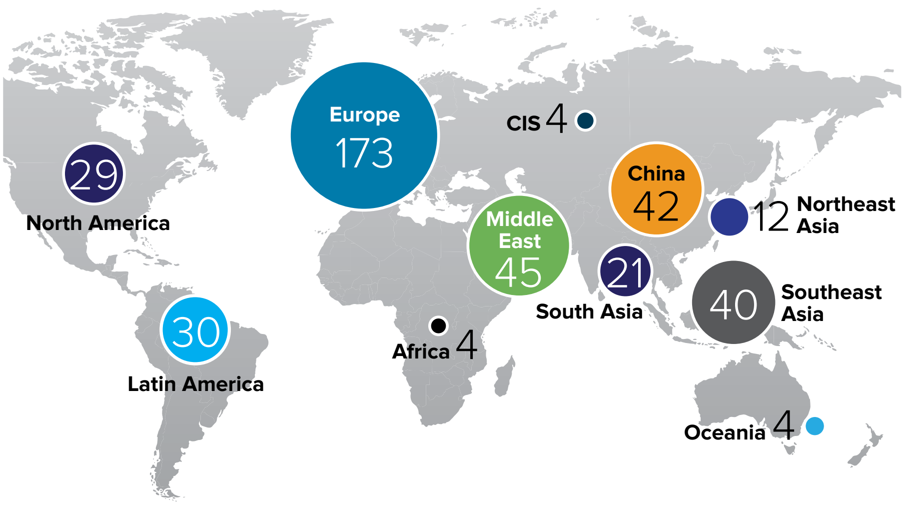
BBAM sources and remarkets aircraft for FLY Leasing and Nomura Babcock & Brown. Alongside Nomura Babcock & Brown, BBAM has become the largest arranger of Japanese equity capital to the airline industry, having financed more than 300 aircraft with Japanese operating lease deals.

BBAM manages the 83-aircraft fleet of FLY Leasing, the NYSE-traded public company, and owns about 14% of the lessor's stock.

Over the past few years, BBAM has helped FLY Leasing to transform its fleet from an average age of eight years in the second quarter of 2015 to an average age of 6.1 years in the second quarter of 2017.

FLY Leasing ended the second quarter of 2017 with $335 million of unrestricted cash, and more than $500 million of unencumbered aircraft, which it will use to continue growing its fleet. Its aircraft acquisition target for 2017 is $750 million, of which $459 million had been allocated at the end of the second quarter.

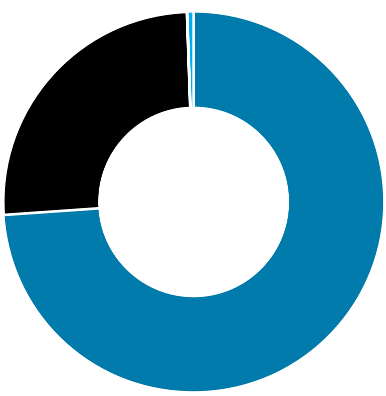
BBAM fleet by region of lessee



Source: *Airfiance Journal*'s Fleet Tracker as of 31 August 2017

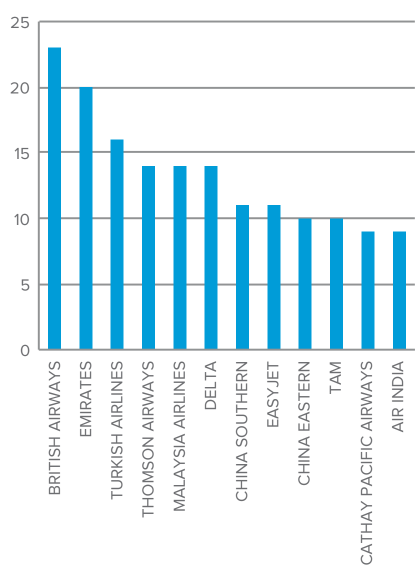
FLY recently acquired two new Boeing 737 Max 8 aircraft and a new 787 Dreamliner in sale and leaseback deals. BBAM's three-largest lessees by value of aircraft include: Emirates (with an estimated $3.38 billion of aircraft on lease), British Airways, $1.75 billion, and Cathay Pacific Airways, $1.20 billion.

BBAM fleet by aircraft type



Narrowbody	299
Widebody	103
Regional jet	2

BBAM top lessees



BBAM Key facts

Name: BBAM

Country: USA

Founded: 1991

Ownership: ONEX 50%, BBAM 50% (as at 15th September 2017, see note)

Head office: San Francisco

Number of Employees: 120

Size of fleet: 402 (managed)

Average age of fleet: 7.5

Number of lessees: 105

Order book: 0

Delivery commitments: N/A

Net income (as of 30 June 2016): N/A

7 DAE Capital

DAE Capital is now in the top 10 lessors, climbing 21 places from 28 last year by number of aircraft. The UAE company's acquisition of Irish lessor AWAS, which closed on 20 August, is the main reason for this jump in ranking. The deal was one of the biggest aviation M&A transactions of the past decade, with DAE taking on an extra $7.5 billion in aircraft assets.

DAE tapped the unsecured markets to help fund the acquisition, issuing $2.3 billion of senior notes in July as part of a three-tranche offering. Morgan Stanley was the sole arranger of the transaction. Through its DAE Funding subsidiary, the lessor priced $500 million 4% notes due in 2020, $800 million 4.5% bonds due in 2022 and $1 billion 5% bonds due in 2024. The notes are fully and unconditionally guaranteed by DAE.

Reflecting on the past year, its chief executive officer, Firoz Tarapore, says: "2017 was a record year for DAE. We priced our inaugural ABS [asset-backed securities] transaction in February 2017. We announced the acquisition of AWAS in April 2017 and closed the acquisition of AWAS in August 2017. As a result of the acquisition, DAE's aircraft leasing division has tripled in size and became one of the top-tier lessors."

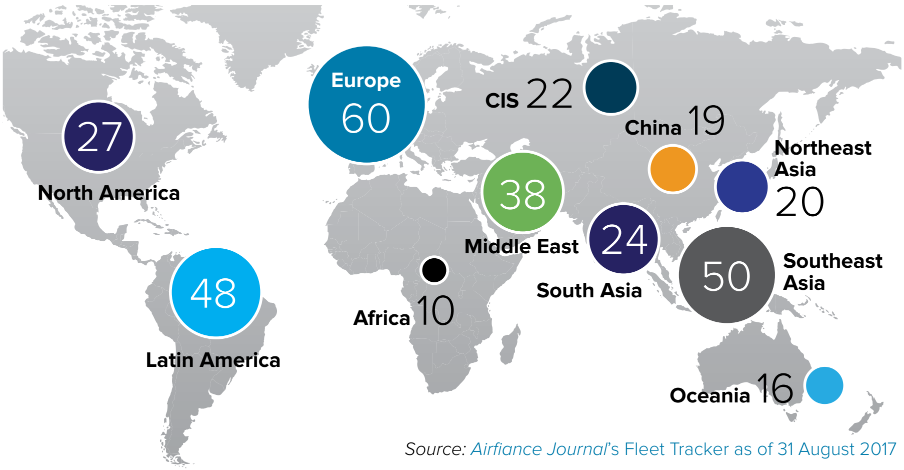
The consolidated lessor now has a fleet of about 400 owned, managed and committed aircraft, on lease to 113 lessees. It has an average fleet age of 5.8 years and an orderbook of 23 aircraft. Although its head office remains in Dubai, after the AWAS acquisition, it can now go to market in six locations: Dubai, Dublin, Singapore, Miami, New York and Bellevue, Washington.

"DAE Capital now needs to secure committed growth and will focus on placing an order with Boeing and/or Airbus for a large number of narrowbody aircraft," says Tarapore. "DAE Capital will also continue to evaluate and pursue, as appropriate, other channels to grow the portfolio at an appropriate risk-adjusted return."

Even after the acquisition of AWAS, Tarapore anticipates there being more consolidation in the leasing industry going forward.

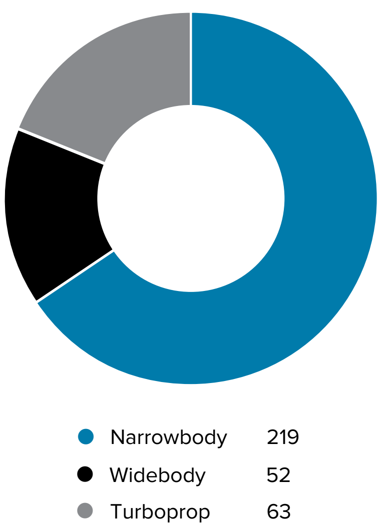
"We fully expect further consolidation in the industry as scale is constantly being refined and many smaller players are finding it increasingly difficult to differentiate their offerings and to originate new business," says Tarapore. "Increasingly, clients want to deal with bigger, strongly capitalised lessors who can sit across the table from them and offer a comprehensive range of solutions to help them grow their business and manage their fleet to adapt to changing market conditions. Consolidation is inevitable as the value propositions of smaller transaction lessors is eroding in a perceptible way."

DAE fleet by region of lessee

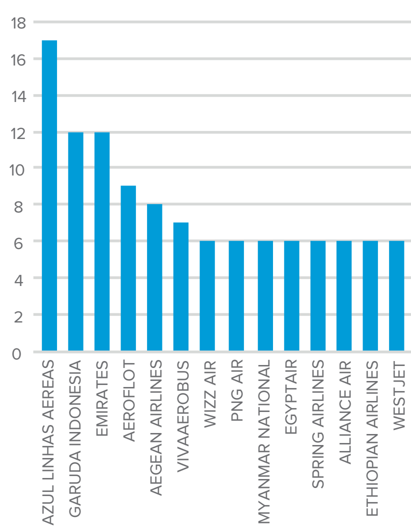


Source: *Airfiance Journal*'s Fleet Tracker as of 31 August 2017

DAE fleet by aircraft type



DAE top lessees



DAE Key facts

Name: Dubai Aerospace Enterprise (DAE) Ltd

Country: United Arab Emirates (with offices in Ireland, US and Singapore)

Founded: 2006

Ownership: Investment Corporation of Dubai (about 96%)

Head office: Dubai, UAE

Number of employees: about 1,050

Size of fleet: about 400 (owned, managed and committed)

Average age of fleet: 5.8 years

Number of lessees: 113

Orderbook: 23

Unsecured credit ratings: Ba2/BB

Total assets ($): about 14 billion

Net income: N/A

8 BOC Aviation

BOC Aviation has made significant headway since its 2016 initial public offering (IPO) in Hong Kong.

The IPO added $550 million of equity to the Singapore-based lessor's balance sheet, and the company posted a healthy net profit for the first half of 2017 of $240 million, increasing its profit from $212 million for the same period in 2016.

At the end of 2016, the company put this equity to work, executing some large transactions, including one with Air China for five widebodies. BOC Aviation also took delivery of its 500th Airbus and Boeing aircraft in April 2017 with the delivery of an Airbus A320 to China Eastern. In May, BOC Aviation passed the milestone of having a total of 700 commitments to both manufacturers, counting 500 aircraft "plus effectively 200 aircraft on order or committed purchase and leaseback".

The lessor expects 2017 to be its "most active year ever", with 78 aircraft scheduled for delivery.

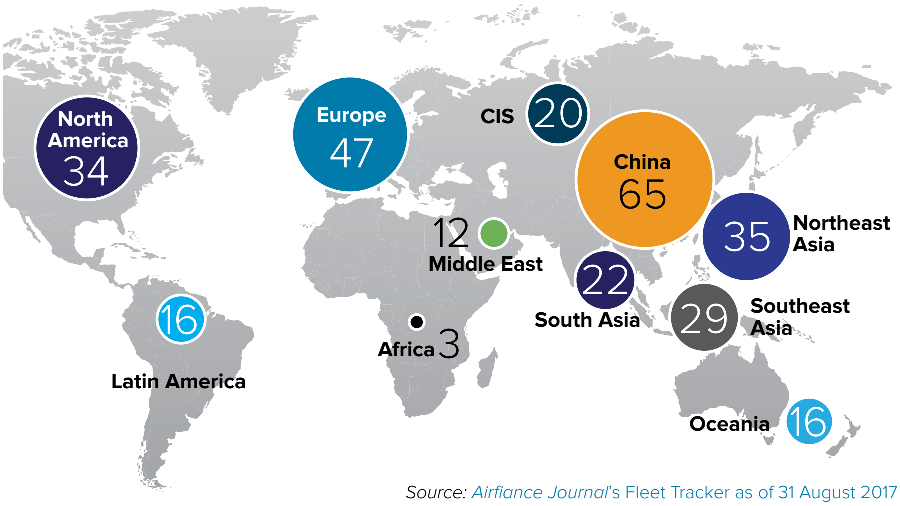
"If you compare us with the IPO, we've grown the net book value of aircraft about 25%, so we've had significant growth over the last 12 months," the company's chief executive officer Robert Martin tells *Airfinance Journal*.

One of the few things holding back his company's rapid growth is industry-wide manufacturer delays. Late deliveries meant BOC Aviation's balance sheet growth was close to a billion dollars less than expected in the first half.

"We're always putting pressure on [them] but, at the end of the day, it's up to the manufacturers to make sure their supply chain vendors are providing the right equipment to the right quality. That's what this comes down to," says Martin.

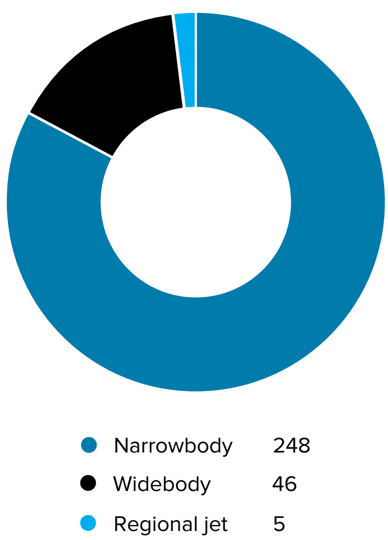
He adds: "It's not just Pratt & Whitney. We are also seeing some smaller delays with CFM engines as well, and I think the speed at which the manufacturers decide to increase their production, not all of the supply chain is keeping up with them."

BOC Aviation fleet by region of lessee

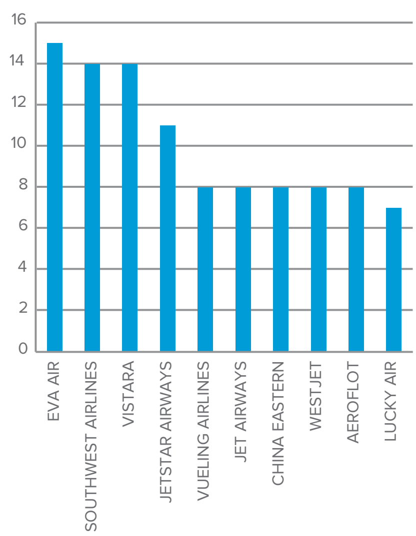


Source: *Airfiance Journal*'s Fleet Tracker as of 31 August 2017

BOC Aviation fleet by aircraft type



BOC Aviation top lessees



BOC Aviation Key facts

Name: BOC Aviation Limited

Country: Singapore

Founded: November 1993, as Singapore Aircraft Leasing Enterprise

Ownership: Public company listed on the Hong Kong Stock Exchange

Head office: Singapore

No of employees: 151 (as of 30 June 2017)

Size of fleet: 297 aircraft: 261 owned and 36 managed (as of 30 June 2017)

Average age of owned fleet: 3.1 years

Number of lessees: 75 airlines in 34 countries

Orderbook: 196 (as of 30 June 2017)

Delivery commitments: $9.1 billion from second half 2017

Unsecured credit rating: A- By Fitch and A- by S&P

Total assets (as of 30 June 2017): $14.4 billion

9 Air Lease

With its headquarters in Los Angeles, Air Lease (ALC) was founded by aircraft leasing industry pioneer Steven Udvar-Hazy in 2010 and went public on the New York Stock Exchange in 2011.

After departing International Lease Finance (ILFC) in 2010, a company he founded in 1973, Hazy teamed up with his long-time ILFC colleague John Plueger to launch ALC.

They have worked together for more than 30 years, and continue their leadership at ALC with Plueger as chief executive officer and Hazy as executive chairman of the board.

ALC's strategy since inception has been to own young aircraft on long-term leases with a diversified base of customers. As of 30 June 2017, ALC owned 240 aircraft with a weighted average age of 3.6 years and a weighted average remaining lease term of 6.9 years. The company manages an additional 48 aircraft and has rapidly grown its management business through various ventures, including Blackbird Capital and Thunderbolt.

ALC has a $28.5 billion orderbook of 373 aircraft with Boeing and Airbus that stands 90% placed through 2019 as of 30 June. As a result of ongoing customer demand for aircraft in its portfolio, the lessor topped up orders at the Paris air show earlier this year for an additional 26 aircraft.

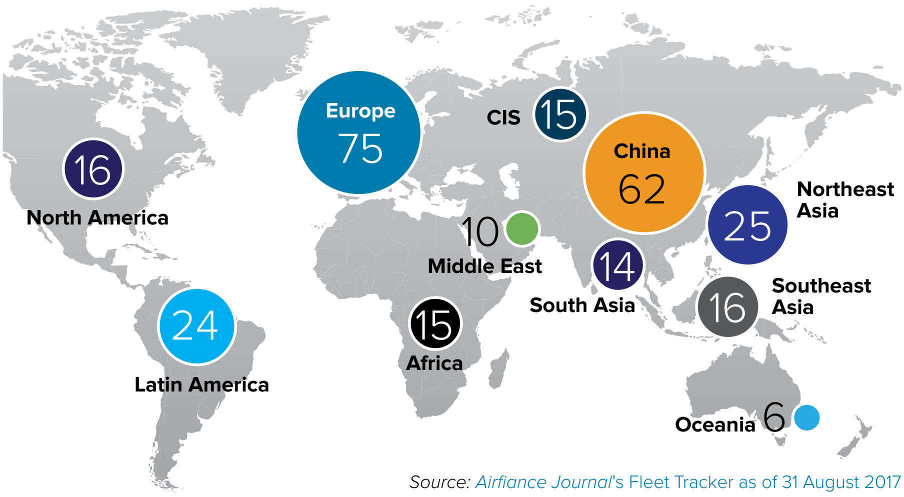
The company says its strategy and key relationships have driven results that continue to impress. As of fiscal year end 2016, the company's revenues exceeded $1.4 billion, with net income of $375 million and pre-tax profit margins north of 40%.

ALC says its operating performance and growth is achieved within the financial targets it set from day one, including debt to equity of 2.5 times.

The company continues to be the highest standalone-rated aircraft lessor with a BBB rating from Standard & Poor's and Fitch and an A- rating from Kroll. These ratings have provided the lessor with ongoing access to the investment-grade capital markets.

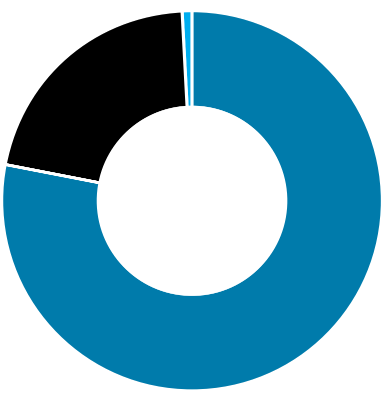
In June 2017, ALC issued a 2.625% five-year bond to refinance a portion of the 5.625% five-year bond ALC issued in 2012 as an unrated company. As a result of refinancing this legacy debt – together with a ratings improvement and an overall healthy market – the company has driven its composite cost of funds down to about 3% as of 30 June.

ALC fleet by region of lessee



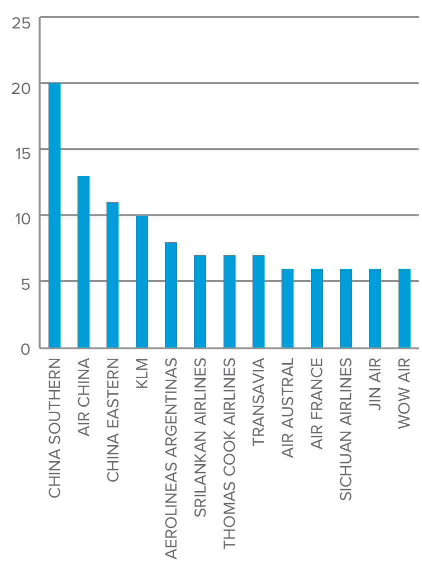
Source: *Airfiance Journal*'s Fleet Tracker as of 31 August 2017

ALC fleet by aircraft type



Narrowbody	217
Widebody	59
Regional jet	2

ALC top lessees



ALC Key facts

Name: Air Lease

Country: USA

Founded: 2010

Ownership: Public company listed on the New York Stock Exchange

Head office: Los Angeles, CA, USA

Size of fleet: 240

Average age of fleet: 3.6 years

Number of lessees: 88 Airlines

Orderbook: 373 (as of 30 June 2017)

Delivery commitments: $28.5 billion

Unsecured credit ratings: S&P BBB; Fitch BBB; Kroll A-

Net income (at full-year 2016): $374.9 million

10 Aviation Capital Group

Newport Beach, California-based Aviation Capital Group (ACG) is a wholly owned subsidiary of Pacific Life, an A+-rated insurance company that was founded in 1868. With 30 years in aviation, ACG is also one of the longest-running leasing companies in the business, with offices in Dublin, Singapore, Shanghai, Beijing and Santiago in Chile.

Pacific Life announced it was considering a partial initial public offering of the lessor at the end of 2015. It has not made other announcements since then, and *Airfinance Journal* understands the process is still under consideration.

PL is rated AA- by Standard & Poor's, A+ by Fitch and A1 by Moody's and A+ from A. M. Best. ACG also has its own strong standalone credit ratings (BBB from Fitch and A- from Standard & Poor's).

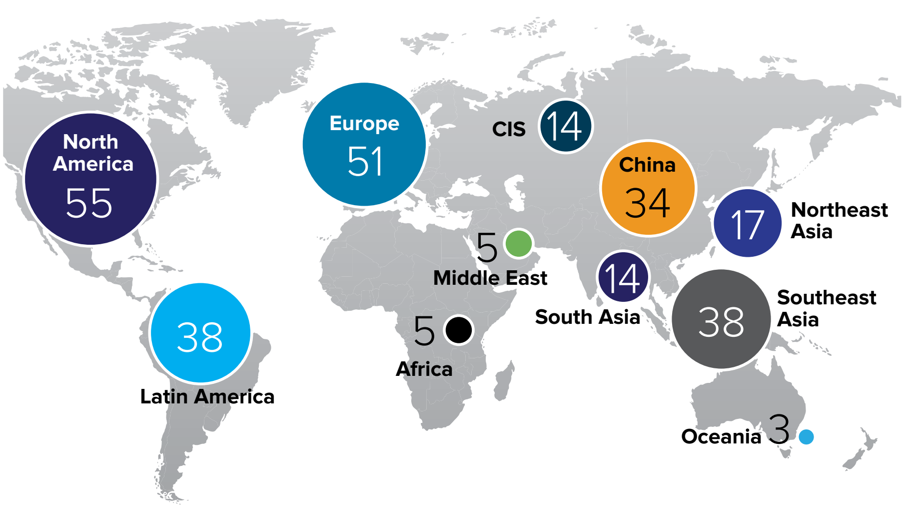
The lessor has made strides in recent years to reduce the percentage of secured debt on its balance sheet. In 2011, the percentage of secured debt to total assets was 43.4%.

At the end of the second quarter 2017, the percentage was reduced to 10.2%. ACG has been an active issuer ($11 billion-plus since 2010) of unsecured paper (144A) and was the first leasing company to issue these notes after the 2008-09 financial crisis. As of June 2017, ACG had outstanding debt of $5.56 billion, with unsecured borrowing consisting of 83.7% of the total.

In March 2016, ACG announced it had taken a 20% stake in a new leasing joint venture with two Hong Kong partners (Chow Tai Fook Enterprises and NWS Holdings). The joint-venture company was created to buy, sell and lease aircraft similar to the types already in ACG's fleet, such as the A320- and 737-family aircraft.

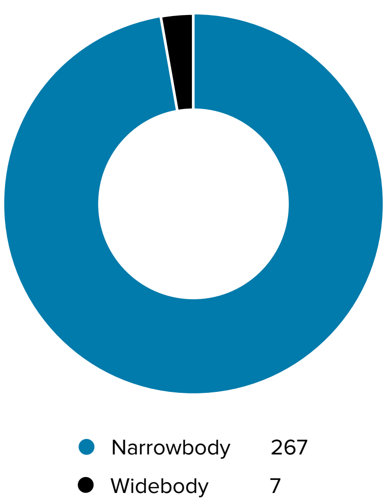
The company also has a considerable orderbook of new-technology aircraft. ACG's backlog at the end of June 2017 consisted of 61 Airbus A320neos plus five A320Ceos, 80 Boeing 737 Max aircraft, four 737NGs and five 787-9s. ACG has about 95 customer airline clients in about 40 countries.

ACG fleet by region of lessee

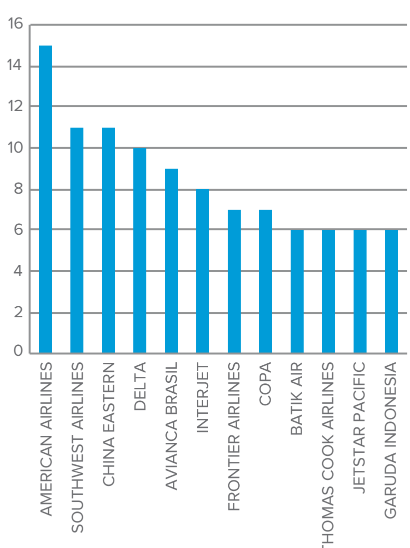


Source: *Airfinance Journal*'s Fleet Tracker as of 31 August 2017

ACG fleet by aircraft type



ACG top lessees



ACG Key facts

Name: Aviation Capital Group

Country: USA

Founded: 1989

Ownership: Pacific Life Insurance Company

Head office: Newport Beach, California, USA

Number of employees: 105

Size of fleet: 270 (owned and managed)

Average age of fleet: 5.9 years

Number of lessees: about 95

Firm orders and commitments: 171 aircraft

Delivery commitments: $9.25 billion

Unsecured credit ratings: Fitch BBB (stable); S&P A- (stable)

Net income (IH 2017): $887.5 million (includes benefit from LLC conversion)